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Modelling Government Fiscal Behaviour in Canada

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The views expressed in this paper are those of the authors and no responsibility for them should be attributed to the Bank of Canada or to the Department of Finance.

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ABSTRACT

There are many models of fiscal policy in the economic literature and each has been based on a particular set of assumptions concerning the interaction of policy variables. However, even though these assumptions are critical to the behaviour of the models, there has as yet been no systematic attempt to test their validity or relative importance. Thus, in undertaking the research presented here, we were motivated by a desire to provide such a systematic study and to establish a general set of guidelines around which specific models of fiscal policy could be built.

Our methodology involved the identification of any empirical regularities during the past two decades which could be used to characterize the conduct and assess the impact of fiscal policy in Canada. For our purposes, fiscal variables were defined in terms of the various national accounts measures of government receipts, expenditures and transfers. Using two econometric models of the Sims type (1978, 1980), we examined the reactions of both aggregate and disaggregate fiscal variables to movements in five economic indicators: a measure of the gap between actual and potential income, inflation, potential output growth, a real interest rate measure, and real income per capita. The result is a stylized description of government policy that can be used as a basis for structural econometric modelling.

Our principal finding was that the fiscal variables of all levels of government are endogenous; they responded to movements in the economic indicators considered in the study, particularly inflation and cycles in real income. Of general relevance for econometric modelling, moreover, is the finding that neither highly aggregated nor highly disaggregated models of fiscal policy reflect the true extent of this policy endogeneity. Too much aggregation results in an underestimated measure of policy endogeneity because policies with dissimiliar characteristics are combined. Too much disaggregation also results in an underestimate of policy endogeneity because many policy interdependencies are overlooked. According to our results, the level of aggregation at which policy

feedback is most evident occurs when government balances are disaggregated only into their revenue, expenditure and transfer components, and these components are not disaggregated further.

In addition, some of our more specific results have a bearing on a number of current issues in public finance. According to our measures, fiscal variables move more consistently in a contracyclical direction than some studies of fiscal policy would have us believe. We also found that while inflation does systematically influence the revenues and expenditures of government, corporate tax revenues have been relatively insulated from the effects of inflation.

RESUME

La littérature économique abonde en modèles de politiques budgétaires qui reposent chacun sur un ensemble distinct d'hypothèses concernant l'interaction des variables qui entrent en jeu. Même si ces hypothèses déterminent le comportement des modèles en question, aucune tentative systématique n'a été faite, toutefois, pour examiner leur validité ou leur importance relative. Aussi, en entreprenant les recherches dont nous présentons ici les résultats, avons-nous voulu remédier à cette lacune et établir un ensemble général de lignes directrices pouvant servir dans la construction de modèles particuliers de politiques budgétaires.

La méthode employée ici consiste à préciser les réactions qui se sont produites assez régulièrement au cours des deux dernières décennies pour qu'elles puissent servir à caractériser la conduite de la politique budgétaire au Canada et à en évaluer l'impact. A cette fin, les variables budgétaires ont été définies en fonction de diverses données des comptes nationaux, en l'occurrence les recettes, les dépenses et les paiements de transfert des gouvernements. A l'aide de deux modèles économétriques semblables à ceux que Sims a mis au point (1978, 1980), nous avons examiné comment les variables budgétaires - tant les agrégats que leurs composantes - réagissent aux variations de cinq indicateurs économiques : la différence entre le revenu réel et le revenu potentiel, le taux d'inflation, la croissance de la production potentielle, le taux d'intérêt réel et le revenu réel par habitant. De cet examen découle une description schématisée des politiques gouvernementales, qui pourra servir de point de départ dans la construction de modèles économétriques structurels.

Notre principale découverte a été que les variables budgétaires sont endogènes quel que soit le niveau de gouvernement considéré. En effet, ces variables ont réagi à l'évolution des indicateurs économiques retenus, notamment à l'inflation et aux cycles du revenu réel. Par ailleurs, la découverte que ni les modèles fortement agrégés de politiques budgétaires ni les modèles très détaillés ne révèlent le degré véritable d'endogénéité des politiques est une donnée dont il faut tenir compte dans l'élaboration

des modèles économétriques. Une agrégation excessive nous amène à sous-estimer le degré d'endogénéité des politiques, car on en vient à regrouper des politiques ayant des caractéristiques différentes. Il en est de même des modèles trop détaillés, car on en vient à laisser de côté un trop grand nombre de rapports d'interdépendance entre les politiques. D'après nos recherches, les modèles de politiques budgétaires n'atteignent le niveau d'agrégation auquel les réactions des politiques budgétaires sont le plus évidentes que lorsque le budget est réparti uniquement entre les recettes, les dépenses et les paiements de transfert.

De plus, quelques-uns des résultats de nos travaux jettent de la lumière sur certaines questions qui sont débattues dans le domaine des finances publiques. Nous avons découvert que les variables budgétaires que nous avons retenues ont un comportement anticyclique plus régulier que certaines études menées sur le sujet ne le laissent croire. Nous avons aussi découvert que l'inflation influence systématiquement les recettes et les dépenses du gouvernement, mais qu'elle a des effets très limités sur l'impôt sur le revenu des sociétés.

1 INTRODUCTION

There are many models of fiscal policy in the economic literature and each is based on a particular view of how various policy variables interact. However, even though each model has as its foundation a set of assumptions critical to the behaviour of that model (for example, the exogeneity of certain parameters or aspects of policy), in practice there has been no systematic attempt to examine the validity or relative importance of these underlying assumptions. Thus, in undertaking the research described here, we were motivated by a desire to provide a systematic study of these basic assumptions and to define a general framework around which specific models of fiscal policy could be built.

First generation model-builders tended to assume that government fiscal variables were exogenous. When these variables were not in fact exogenous, the resulting models produced inaccurate forecasts and biased multiplier estimates. In recognition of this, much effort has been directed towards constructing positive (as opposed to normative) models of government behaviour. These models have generally been based on one of three methodological foundations.

In one approach, published budget projections of government receipts, expenditures, et cetera have been used to estimate the future course of fiscal policy. These estimates are usually treated as exogenous for model estimation and forecasting because presumably they already incorporate the anticipated response of policy to a given forecast of economic activity. The Brookings model (Ando et al., 1965) as well as studies by Galper and Gramlich (1968), and Curtis and Kitchen (1975) followed this route. However, a number of limitations have discouraged the widespread acceptance of this approach. For example, actual policy and projected policy based on budget estimates can differ systematically and this divergence must also be modelled. Also, the timing within the budgetary process varies, implying a need to model the lags between the new authority to determine policy, policy planning and the execution of policy (Galper and Wendal, 1968). Moreover, since budget estimates are not made for the indefinite future, forecast horizons are limited. Finally, budget

estimates are useful in model simulations only when it is assumed that policy will remain unchanged.

A second approach has been to model the institutional aspects of fiscal policy. This is the route Helliwell et al. (1969) followed in constructing a model of government revenues which reproduced Canadian tax laws in detail. Pauly (1978) used a similar approach in modelling West German tax laws, and Davis (1976) suggested ways in which such an approach could be used to model government transfer payments. While the institutional approach allows for more endogeneity of government actions than the budgetary approach, it nevertheless leaves key policy instruments exogenous. For example in Pauly, tax rates, exemptions and deductions, and the number of tax returns are exogenous. While in principle it is not necessary for institutional parameters to be exogenous, in practice it is difficult to identify stable reaction functions for each individual parameter. Moreover, practitioners of the institutional approach tend to treat each fiscal category as an independent entity and overlook the fact that different tax and expenditure categories may be interrelated behaviourally.[1]

A third approach would be to model the behaviour of government policymakers directly, rather than the features of government

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1. An example may be useful in highlighting the difference between what we label the institutional and behavioural approaches to policy modelling. An institutional equation for personal tax revenues might mimic tax legislation as follows:

$$T = \sum_{i=1}^{k} (\alpha_i(Y_i - EX_i) - DED_i)NT_i + u$$

where T is total personal tax revenues,
Y_i is the average income of income class i,
EX_i is the average exemption of income class i,
DED_i is the average deduction of income class i,
NT_i is the number of tax returns filed for income class i,
α_i is the average tax rate for income class i, and
u is an approximation error.

institutions. The justification for this emphasis is that institutions themselves are endogenous and likely to change in response to varying economic, social, and political conditions. Moreover, while individual institutional parameters may not respond to economic indicators in a predictable way, the response of aggregate policy variables may be quite predictable. In following this approach, some studies have been based on a choice-theoretic foundation which posits that governments maximize social welfare explicitly (Henderson, 1968; Gramlich, 1969; and Eckstein and Halvorsen, 1974). Other studies treat government as a public good and model the demand for this good in much the same manner as the demand for private goods (Borcherding and Deacon, 1972; Deacon, 1978; Dudley and Montmarquette, 1979; and Auld, 1980). Yet other studies have sought to outline a set of laws or conventions which guide government behaviour (Robinson and Courchene, 1969; Baumol and Oates, 1975; Aghevli and Khan, 1977; Peacock and Wiseman, 1979; and Marrese, 1981). However, despite numerous studies there remains substantial disagreement over the best approach to modelling government behaviour.

2 METHODOLOGY

In this study, we have adopted the third approach to modelling fiscal policy in that we follow Sims' (1980) "alternative strategy for empirical macroeconomics" in which a macro-model is formulated and estimated as an unrestricted reduced form with all variables treated as endogenous.

Typically, α, EX, DED, NT, and k are taken as exogenous even though these variables (or in some cases parameters) are under the control of the fiscal authorities and may be presumed to change in response to economic variables.

A behavioural model can be superimposed on this institutional framework by constructing reaction functions for α, EX, DED, NT, and k. If these functions are stable and relatively independent of one another such a model will be useful as a framework for policy analysis. On the other hand, if the institutional parameters are highly variable and interdependent, individual reaction functions may not be identifiable and an alternative framework for policy analysis is necessary. In this case it may be useful to focus directly on the relationship between T and those variables which cause α, EX, DED, NT, k (and hence T) to vary.

Without restriction means "without restrictions based on supposed a priori knowledge". The method involved summarizing the data by means of an unrestricted reduced form and then formulating and testing various economic hypotheses based on the estimated model. This strategy has particular appeal in the policy modelling application because there are no generally accepted theoretical foundations for a behavioural model.

A useful way to classify our model would be as the unrestricted reduced form of an unspecified macro-model which does have an explicit behavioural structure. The obvious advantage of the Sims methodology is that because there is a minimum of restrictions, findings are not presupposed. On the other hand, not restricting a model tends to produce results that are descriptive and without structural interpretation. Viewed in this light, our results are best regarded as the identification of certain characteristics of policy, rather than as the identification of a "structural" model.

3 THE MODEL

The study described in this paper covers the period 1963Q1 to 1981Q2. Two models are analyzed: Model 1 is highly aggregated and consists of equations describing the aggregate fiscal balances of federal, provincial, and municipal governments, as well as five economic indicators: a national income gap measure, inflation, potential output growth, a real interest rate measure, and real income per capita.[2] Model 2 is a disaggregated model and describes the national accounts sub-categories of the fiscal variables separately although not independently; there are twenty-five fiscal categories and five economic indicators in this model. For reference, a list of mnemonics cataloguing the variables used in the study appears on page 26. Throughout, all fiscal policy variables are measured as a proportion of GNE.[3] Specific results are reported in Tables 3 to 39 on pages 27 to 65.

We can write both versions of our model as:

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2. For a lengthy discussion of possible factors influencing the growth of public expenditures in Canada see Bird (1970). Bird distinguishes some 19 factors which have a potential influence on the level and pattern of government expenditures. These factors comprise: "environmental" influences such as geography, history, and the constitutional framework; "technical" factors such as population growth and age structure, population density, and distribution and consumption technology; "political" and "administrative" factors which include ideology, tax tolerance, attitudes to centralization, the nature of bureaucracy and the budgetary process; and finally "economic" factors of the sort we have chosen to emphasize in this study. Other studies outlining the potential determinants of public sector growth include: Auld (1976), Beck (1979), Borcherding (1977), Foot (1978), and Peacock and Wiseman (1967).

3. We measure fiscal variables in proportion to GNE for two reasons. First, the empirical technique requires stationary error series and this transformation of the data was sufficient to achieve the necessary stationary condition. Second, from a behavioural point of view, it seems that policymakers are likely to key on normalized variables, and for fiscal variables proportionality to GNE seems sensible.

$$y_1(t) = \sum_{s=1}^{q} A_{11}(s)y_1(t-s) + \ldots + \sum_{s=1}^{q} A_{1k}(s)y_k(t-s) + e_1(t)$$

$$\vdots$$

$$y_k(t) = \sum_{s=1}^{q} A_{k1}(s)y_1(t-s) + \ldots + \sum_{s=1}^{q} A_{kk}(s)y_k(t-s) + e_k(t)$$

where the y_i terms represent the various fiscal variables and economic indicators, the A_{ij} terms are coefficients to be estimated, and the e_i are error terms with assumed constant finite variance. We assume a Wold-recursive ordering and hence only innovations to the system occur contemporaneously; all other interactions among variables occur with at least a one-period delay.

Unrestricted, Model 2 consists of thirty equations with thirty variables in each equation and lags on each variable. This model requires 900q free parameters. Therefore, to preserve degrees of freedom two restrictions are placed on the coefficients A_{ij} of the lag polynomials. First, information is grouped by fiscal year. This implies that each set of polynomial coefficients A_{ij} is comprised of only two free parameters, one corresponding to the value of y in the previous quarter, and one corresponding to the value of y in the previous fiscal year.[4] Second,

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4. For example, a typical formulation is:

$$\begin{aligned} y_i(t) = \ldots + a_{ij1}*y_j(t-1) + a_{ij2}(&Q2*.25(y_j(t-1)+y_j(t-2) \\ &+ y_j(t-3)+y_j(t-4)) + Q3*.25(y_j(t-2)+y_j(t-3) \\ &+ y_j(t-4)+y_j(t-5)) + Q4*.25(y_j(t-3)+y_j(t-4) \\ &+ y_j(t-5)+y_j(t-6)) + Q1*.25(y_j(t-4)+y_j(t-5) \\ &+ y_j(t-6)+y_j(t-7))) + a_{i,j+1,1}*y_{j+1}(t-1) + \ldots \end{aligned}$$

similar fiscal categories are grouped together, and this grouping varies depending on the fiscal category being modelled. The exact restrictions imposed are evident in the typical equations presented in Table 1, and these restrictions provide an average of 42 degrees of freedom per equation. It is in this form that the model is estimated.

After estimation, each version of the model is transformed into a moving average representation to calculate what Sims describes as an "innovation account". The purpose is to apportion to the innovations e_i the forecast error variance of the model's variables and hence to measure the significance of each variable's response to a "surprise" movement in every other variable. In its moving average representation, either model can be written as:

$$y_1(t) = \sum_{s=0}^{\infty} B_{11}(s)e_1(t-s) + \ldots + \sum_{s=1}^{\infty} B_{1k}(s)e_k(t-s)$$

$$\vdots$$

$$y_k(t) = \sum_{s=1}^{\infty} B_{k1}(s)e_1(t-s) + \ldots + \sum_{s=0}^{\infty} B_{kk}(s)e_k(t-s)$$

The coefficients of the lag polynomials B_{ij} are obtained from model simulation: $\sum_{s=1}^{r} B_{ij}(s)$ is the cumulative multiplier after r elapsed periods associated with y_i as a result of an innovation in y_j.

When constructing the innovation account, the set of error series e should be orthogonalized. The reason is that historically, innovations to

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where Q1,...,Q4 are quarterly seasonal dummy variables. This restriction on the shape of the lag is not usual, especially for the economic indicators. However, in all cases the parameter on the one-quarter lag is free. Moreover, if economic agents recognize that a significant portion of fiscal policy is set on a fiscal year basis, then predictions of policy within fiscal years will be more accurate than between years, and the shape of this lag will not be that unrealistic.

Table 1

TYPICAL EQUATIONS

Let i = 1 for federal
2 for provincial
3 for municipal

For revenues:
Let j = 1 for persons
2 for corporate
3 for indirect
4 for other

For expenditures:
Let j = 1 for goods and services
2 for investment

For transfers:
Let j = 1 to persons
2 to government
3 other

Revenues

Typical equation for rev(i,j) = revenues to government i from category j:

$$rev(1,1) = f(rev(1,1)_{-1}, \sum_{j=2}^{4} rev(1,j), \sum_{i=2}^{3}\sum_{j=1}^{4} rev(i,j), \sum_{j=1}^{2} exp(1,j), \sum_{i=2}^{3}\sum_{j=1}^{2} exp(i,j), \sum_{i=1}^{3}\sum_{j=1}^{3} trn(i,j), \text{economic indicators})$$

Expenditures

Typical equation for exp(i,j) = expenditure by government i on category j:

$$exp(1,1) = f(exp(1,1)_{-1}, exp(1,2), \sum_{i=2}^{3}\sum_{j=1}^{2} exp(i,j), \sum_{j=1}^{4} rev(1,j), \sum_{i=2}^{3}\sum_{j=1}^{4} rev(i,j), \sum_{i=1}^{3}\sum_{j=1}^{3} trn(i,j), \text{economic indicators})$$

Tranfers

Typical equation for trn(i,j) = transfers by government i to category j:

$$trn(i,j) = f(trn(1,1)_{-1}, \sum_{j=2}^{3} trn(1,j), \sum_{i=2}^{3}\sum_{j=1}^{3} trn(i,j), \sum_{j=1}^{4} rev(1,j), \sum_{i=2}^{3}\sum_{j=1}^{4} rev(i,j), \sum_{j=1}^{2} exp(1,j), \sum_{i=2}^{3}\sum_{j=1}^{2} exp(i,j),$$

economic indicators)

the system have not been independent: the e_i terms are contemporaneously correlated. It is therefore inappropriate to associate a shock to y_i say, solely with an innovation in e_i. Orthogonalizing the error series allows independent innovations to be associated with each variable. It is then possible to associate the response of y_i with these innovations. Clearly, there is no unique way in which the dependencies between the e_i terms can be allocated. Sims suggests an orthonormalizing transform such that $v(t) = G.e(t)$, where G is a triangular matrix chosen to make $v(t)$ a matrix of independent white noise series.

After transformation, either model can be written as:

$$y_1(t) = \sum_{s=0}^{\infty} B_{11}(s)G^{-1}v_1(t-s) + \ldots + \sum_{s=1}^{\infty} B_{1k}(s)G^{-1}v_k(t-s)$$

$$\vdots$$

$$y_k(t) = \sum_{s=1}^{\infty} B_{k1}(s)G^{-1}v_1(t-s) + \ldots + \sum_{s=0}^{\infty} B_{kk}(s)G^{-1}v_k(t-s)$$

The proportion of the error variance of the r + 1 step-ahead forecast for y_i which is accounted for by an innovation in y_j is:

$$\sum_{s=1}^{r} B_{ij}(s)G^{-1}$$

The matrix G depends on how the variables are ordered in the orthonormalizing transform. Typically, those variables ordered first will be given the most scope in accounting for innovations; in other words, interdependencies between the historical error series will be ranked corresponding to the variables ordered first in the transform. Thus, it makes sense to order first those variables which, for a priori reasons, are considered to be the most exogenous, and to measure the robustness of the results against alternative orderings. We used this methodology in

the empirical analysis that follows.[5] In addition, we also included trend and seasonal variables in the model.[6] These variables were considered deterministic and were excluded from the innovation account.

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5. The ordering used for the reported results was: expenditures, transfers, revenues, and economic indicators. Varying the order of the subcomponents within these groupings made little difference to the results. Varying the order of the components does change the absolute magnitudes reported but generally not the relative exogeneity rankings of the variables involved.

6. A description of the data is included in an Appendix. A preliminary study of the data indicated the possibility of a "kink" in the trends of the fiscal variables in 1973. In estimation we allowed for the possibility that both trends and seasonal patterns adjust in 1973. Data sources are listed in Table A-1.

4 CHARACTERISTICS OF POLICY RESPONSE

4.1 Endogeneity of Policy Variables

Table 2 outlines four issues in policy modelling which are particularly well suited to the Sims methodology. The most important and basic of these is the extent to which fiscal policy variables are endogenous. According to Sims' definition, a variable x is endogenous if observed variables y (other than past observations on x) are useful in predicting movements in x. Thus, the degree of endogeneity of a fiscal variable is measured by the intensity of its response to movements in other variables -- in our case the economic indicators.

It is important to know if the fiscal variables appear to be endogenous because each individual variable responds independently to economic conditions, or because one policy decision encompasses a variety of fiscal variables and hence the fiscal variables for the most part respond to each other. In the latter case, fiscal policy might be modelled as a block-recursive system where variables within blocks are linked by institutional or technical relationships.

A related issue is whether there is a particular level of aggregation at which fiscal variables appear to be most endogenous and at which aggregation bias in the sense of Theil (1971) is minimized. There are two facets to this issue. The first concerns whether aggregate fiscal variables are more or less responsive to economic indicators because movements in their subcomponents reinforce or offset one another. The other is whether the response of aggregate fiscal variables is not well determined because of offsetting prediction errors among subcomponents. The first factor focuses on the magnitude of the response coefficients, while the second focuses on their significance. We identified the level of aggregation at which policy feedback is greatest by comparing the response of aggregate fiscal variables to weighted averages of the components.

Tables 5 to 21 provide the details of the innovation account, while Table 22 summarizes the features that relate to overall policy endogeneity. In the aggregate model (Model 1), government balances do not

Table 2

CHARACTERISTICS OF POLICY RESPONSE

Characteristics of Policy	Measure
Endogeneity of policy variables	- Significant F-statistics for fiscal policy variables and economic indicators in policy response functions. - A large proportion of the one-year-ahead policy forecast variation accounted for by economic indicators.
Interdependence of policy variables	- A large proportion of the four-year-ahead policy forecast variation accounted for by other fiscal categories.
Policy activism	
(i) Response of policy to an output innovation	- Over 10 per cent of a policy forecast variation accounted for by an output innovation.
(ii) Response of output cycle to a policy innovation	- Over 10 per cent of the output cycle forecast variation accounted for by a policy innovation.
Policy neutrality to inflation	- Over 10 per cent of the policy forecast variation accounted for by inflation.

appear to respond to movements in the economic indicators: the most significant determinant of the fiscal balance for each government is the past level of its own fiscal balance and the past fiscal balances of other levels of government. (The significance of the economic indicators as a determinant of government balances does, however, increase when the latter half of the period, 1972Q2-1981Q2, is isolated for particular study (Tables 7 and 8), and increases further when the variables in the orthonormalizing transform are reordered such that the interdependent

components of the shocks are assumed to originate with the economic indicators (Tables 6 and 8)).[7]

The disaggregated model (Model 2), can be used to determine how, within the confines of a given model, both aggregate and disaggregate fiscal variables respond to the economic indicators. Here, aggregate responses are calculated from a shock to a weighted average of the component series. For example, a shock to aggregate tax revenues consists of a weighted average of shocks to personal, corporate, indirect, and other revenues where the weights are calculated as the proportion of each subcomponent in the aggregate measure. The aggregate model errors are constructed as the sum of the component error series, and it is these error series that are used in the calculation of the orthonormalizing transform.

The economic indicators play a much more important role in Model 2 than in Model 1. On average the economic indicators account for 18 per cent of the explained variation in the fiscal variables. Their chief effect can be seen in the other provincial tax revenues category where innovations in the economic indicators account for 43 per cent of the explained variation. With respect to the aggregate fiscal variables in Model 2, the economic indicators exert the greatest impact on federal tax revenues where they account for 70 per cent of the variation in the one-year-ahead forecast. In addition, for federal expenditures, the indicators account for 36 per cent of the variation, while for federal transfers they account for over 50 per cent. Overall, the results show that these Canadian fiscal variables respond to the economic indicators and that this response is pervasive.

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7. Both Tables 5 and 6 report an innovation account for Model 1. The difference is that for Table 5 government variables were ordered first in the orthonormalizing transform whereas for Table 6 the economic indicators were ordered first. A comparison of the two tables shows that when contemporaneously correlated innovations between the fiscal variables and the economic indicators are assumed to originate in the policy sector, policy is less endogenous; however, it also shows that the differences arising from a change in ordering are small.

From a comparison of the innovation account of Model 1 with that for Model 2 it is apparent that a certain degree of disaggregation is desirable when modelling policy: for example, when government budget balances are the focus of the model, little feedback from the economic indicators to policy is seen. According to the evidence from Model 2, it is apparent that different subcategories of the fiscal variables exhibit varying responses to the economic indicators, and combining revenue, expenditure, and transfer variables masks the true degree to which these fiscal variables are endogenous. This result demonstrates that the level of aggregation exerts an influence on the magnitude and significance of policy response estimates.

Different degrees of aggregation lead to different levels of significance of response because, over the historical sample, the forecast errors of the components have not been independent. As a result, the significance of the response of an aggregate fiscal variable to the economic indicators either exceeds the average of its subcomponents as their forecast errors reinforce each other, or falls short as the subcomponent forecast errors offset one another. Only when the forecast errors of the subcomponents are independent will the significance of the aggregate response parallel the average of the subcomponents.

The picture that emerges from simulations with Model 2 is that in fact the forecast errors of the subcomponent variables have tended to be reinforcing: generally, the significance of response of an aggregated variable exceeds that of each of its subcomponents. This result is obtained whether the variables are aggregated across governments or across category types. Thus, even though changes in fiscal subcomponents appear unrelated, they do have common causes. For example, the sum of the proportions of explained one-year-ahead forecast error variance accounted for by innovations in the economic indicators was 0.85, 0.81 and 0.82, respectively, for aggregate revenues, expenditures, and transfers. The corresponding averages when the fiscal variables were aggregated by level of government only were 0.57, 0.66 and 0.45, respectively. In all cases, moreover, the aggregate response exceeded the individual responses of the

subcomponents. When aggregated across category types but not across levels of government, the corresponding averages were 0.60, 0.77 and 0.43, respectively. Again the significance of the aggregate response exceeded that of the individual responses. This suggests that models which are highly disaggregated and focus exclusively on the institutional detail of policy will miss interdependencies and hence understate the endogeneity of policy.

4.2 Interdependence of Policy Variables

In order to assess the various policy alternatives, it is important to know how policy variables interact. If policy variables are assumed to be independent when in fact they are not, misleading inferences about the consequences of a policy shock are the likely result. As an example, consider federal and provincial expenditures: if federal and provincial expenditures are substitutes but this substitutability is overlooked, the effects of a simulated shock to provincial expenditures, say, will be overestimated. While some models do incorporate policy interdependencies (see for example Gramlich, 1969; or Eckstein and Halvorsen, 1974) there has not been any attempt to estimate systematically the strength of these interdependent relationships.

We defined the degree of interdependency by the relative significance of each fiscal variable in every other fiscal variable response function: two fiscal variables were classified as interdependent if at least 20 per cent of the explained variation in one of the variables was accounted for by an innovation in the other. In addition, two fiscal variables were considered complements if after one year of cumulative effect, an innovation in one of the variables produced the <u>same</u> direction of effect on the government deficit as an innovation in the other variable. In contrast, two fiscal variables were considered substitutes if an innovation in each of them had an <u>opposite</u> effect on the government deficit.

The relative importance of policy interdependence is apparent[8] in the innovation accounts presented in Tables 9 through 21. Whether an interdependent relationship reflects complementarity or substitutability is apparent from the cumulative multipliers for Model 2 reported in Tables 25 to 37. (Cumulative multipliers for Model 1 can be found in Tables 23 and 24.)

These results suggest that provincial expenditures on goods and services play a central role in explaining variations in other fiscal variables: for example, over the past two decades movements in provincial fiscal variables have preceded movements in federal and municipal fiscal variables. The reason for this result may be the predominance of federal cost-sharing agreements with the provinces and the continual transfer of tax points to the provinces during successive federal-provincial revenue-sharing agreements (Boadway, 1980). Federal and provincial revenues have on average tended to respond in a manner complementary to provincial expenditures, whereas municipal revenues have tended to move in the opposite direction, implying a substitute relationship. In contrast, federal expenditures have been substitutes for provincial expenditures while municipal expenditures have been complements. In all cases, transfers tend to be substitutes for expenditures on goods and services.

The accompanying figure illustrates the dependencies among various fiscal variables as indicated by our model. It should be noted that the linkages represented do not include those that occurred because two policy variables responded to the same economic indicator.

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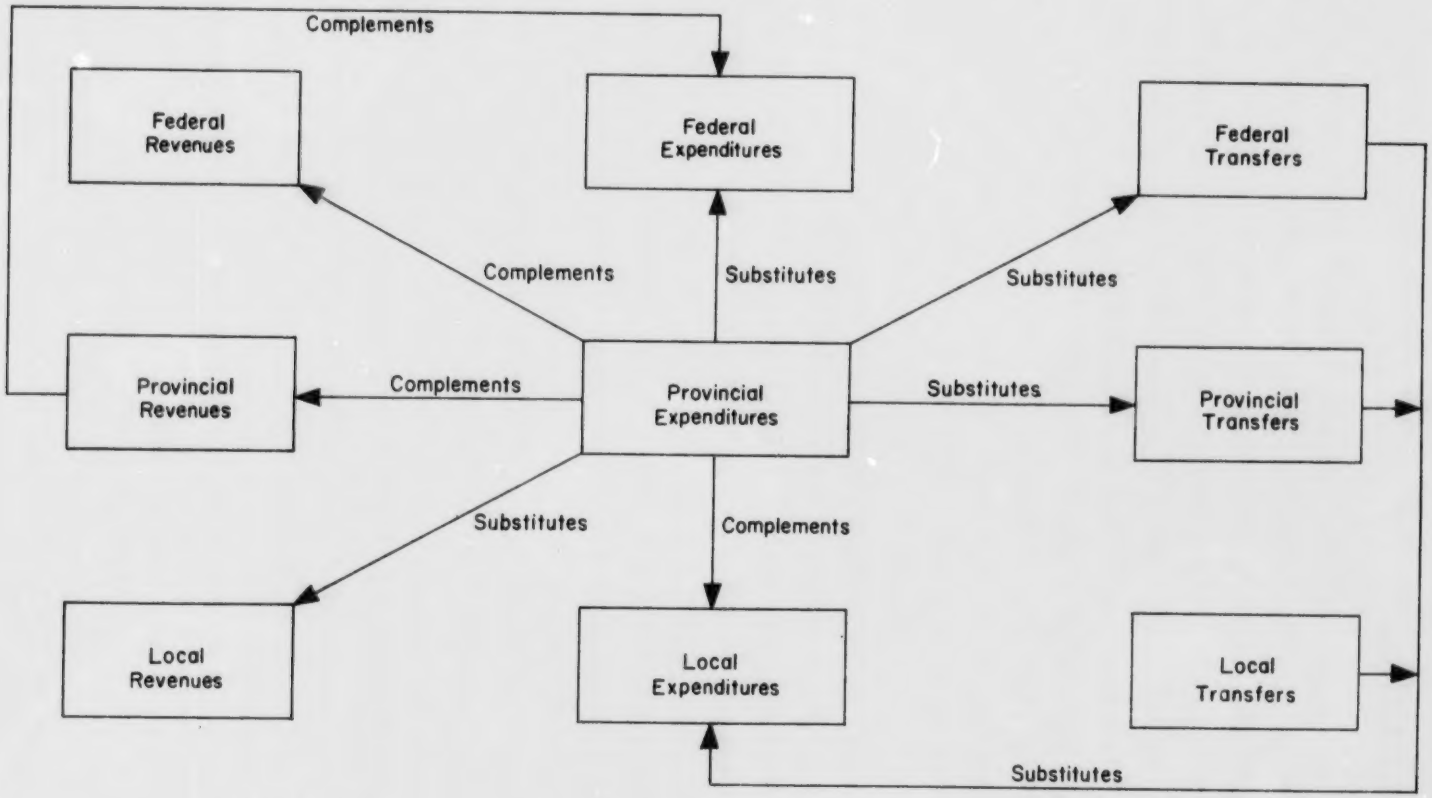
8. For example, and as an aid to reading the tabulated results, from Table 10 it is apparent that the two largest sources of variation in federal tax revenues are provincial/municipal expenditures and the gap measure which, after four years, account for 29 per cent and 46 per cent, respectively, of the forecast error variance. In sum, the economic indicators (DNPGPP, DNUGPD, GAP, RREAL, and YPOP) account for 58 per cent of the variation in federal tax revenues after four years. The past behaviour of federal tax revenues accounts for none of the forecast error variance in federal tax revenues after one quarter, and only one per cent of the variance after four years.

Dependencies between Groupings of Canadian Fiscal Policy Variables



4.3 Policy Activism

One of the most widely recognized objectives of fiscal policy is the reinforcement of economic stability. However, most previous studies of Canadian fiscal policy have found that it has not responded in a consistently contracyclical manner, either when examined during various budgetary episodes (Gordon, 1966 Will, 1967; Auld, 1969; Gillespie, 1973, 1979; and Curtis and Kitchen, 1975) or when studied on a disaggregated basis over longer intervals of time (Robinson and Courchene, 1969). For a fiscal variable to be effective in stabilizing economic cycles it must exert a significant influence on national income, and it must respond to economic cycles with a sign opposite to its effect on income. More specifically, we classify a fiscal variable as effective in meeting this objective if: (i) an innovation in the fiscal variable exerts significant influence on the income-gap variable (where the critical level of significance for the forecast error variance is taken as 10 per cent); (ii) the gap variable has a significant influence on the fiscal variable; and (iii) given conditions (i) and (ii), an innovation in the fiscal variable has an offsetting effect on the gap variable when compared with the effect the gap variable has on the fiscal variable.[9] It follows from this definition that a fiscal variable can be classified as ineffective if conditions (i) and (ii) hold, but the fiscal variable has a reinforcing (rather than an offsetting) effect on the gap variable. Fiscal variables

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9. It is important to recognize that this measure of the "effectiveness" of movements in fiscal variables involves only the significance and not the magnitude of the relationships among variables; hence it is quite possible that while some of the interactions among the variables are statistically significant, from an economic viewpoint the magnitudes involved are small.

Also, it is difficult to argue that the results for the four-year horizon reflect the outcome of planned stabilization. Not only is it unrealistic to assume that the authorities attempt to influence cycles four years hence, it is equally unrealistic to assume that they can accurately anticipate cycles that far into the future. What is shown by reporting the results for the four-year horizon is that movements in fiscal variables which contribute to stability in the short run may not do so over the longer term.

are classified as unresponsive if either of conditions (i) or (ii) does not hold.

There are two important differences between our definition of effective policy and those underlying previous studies. First, we examined the average response of policy over the complete sample from 1963 to 1981 and not just the adequacy of individual budgets. The implication is that we viewed policy changes over the past twenty years as reflecting variations in the degree to which a consistent policy was applied and not as reflecting continuous behavioural change stemming from repeated new directions for policy. Second, no distinction was made between automatic and discretionary policy reactions; indeed, given our assumption that fiscal institutions respond to cyclical change, the distinction between automatic and autonomous policy loses some of its significance.

In Table 38 on pages 62 and 63 we present a summary of the identified stabilizing properties of Canadian fiscal policy. The following patterns are in evidence. Movements in federal revenues tended to counteract economic cycles. Except for federal corporate tax revenues, which were unresponsive after one year and ineffective after four years, and indirect tax revenues which were also unresponsive after one year but effective after four years, all components of federal revenue responded to economic cycles in a manner which contributed to offsetting those cycles. In contrast, provincial and municipal revenues were on average unresponsive after one year and four years: of all the provincial and municipal revenue subcategories, only provincial indirect tax revenue was effective, but only after four years. When aggregated by level of government the influence of the federal government was seen to dominate as virtually all the aggregate revenue categories were classified as effective.

On the expenditure side, federal expenditures were effective only in the short run; using the specific criteria described above, we found that after four years the gap variable was unresponsive to our measure of federal expenditure policy. In the short run, however, federal expenditures (except for investment expenditure) were "effective", so also were provincial and municipal expenditures and, in contrast to federal expenditures, these fiscal variables were also effective after four

years. Given the evidence that the majority of expenditure categories could be classified as effective, it is somewhat suprising to see that when aggregated across levels of government, total government expenditures were effective after one year but not so after four.

Transfer payments would, according to the above criteria, be defined as ineffective.[10] Except for provincial transfers to persons, federal transfers to governments, and "other" municipal transfers, all transfer categories were classified as unresponsive or ineffective. Moreover, this result persisted whether transfers were aggregated by level of government or by category type.

4.4 Policy Neutrality to Inflation

One issue of current concern is whether inflation causes real government revenues and/or expenditures to grow. Some of the implications of such a phenomenon have been discussed by Feldstein (1976, 1980a, 1980b, 1981; with Slemrod, 1978; and with Summers, 1978, 1979). However, most of this analysis has concentrated on showing that inflation increases effective tax rates. Instead, we consider the broader question of whether inflation has resulted in an overall increase in tax receipts as a proportion of GNE. The possibility that tax receipts respond differently than tax rates arises because many policy parameters other than tax rates move with inflation.

The results in Table 39 show that at the aggregate level, between approximately 15 and 20 per cent of the variation in government size, as measured by expenditures or revenues as a proportion of GNE, can be attributed to inflation, regardless of whether size is measured on the

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10. It is important to reiterate that this classification as "ineffective" is strictly in terms of the particular statistical criteria used in this paper. These criteria perform a helpful diagnostic role, but they are not conclusive. In regard to transfer payments, it should be borne in mind that they include public debt charges and that these are in large part determined by the prevailing rate of interest. These rates tend to move contracyclically (and have, on balance, a "stabilizing" effect given their effect on demand) yet such interest rate fluctuations do cause transfer payments to move in a procyclical direction.

revenue side or on the expenditure/transfer side of the balance sheet.

The direction of cumulative response after four years indicates that inflation has resulted in increased government revenue and expenditure/transfers. The response is not large in magnitude, yet the smaller response of the revenue category indicates that inflation has contributed to the overall government deficit in Canada. The reason for an inflation-induced increase in the deficit may well be that governments attempt to maintain real expenditures in the face of adverse relative price movements.[11] The increase in federal and provincial transfers to persons has also contributed to the increase in the deficit.

One particularly interesting finding is that, while inflation has caused an increase in total government revenue as a proportion of GNE, the size of the corporate revenue subcategory is virtually unchanged as a result of inflation: most of the increase in revenue size comes as a result of increased personal and indirect tax revenues at the federal level.[12] Thus, while inflation has resulted in an increased effective tax rate on income from capital (Feldstein, 1981), the amount of total corporate tax revenues (as a per cent of GNP) does not appear to have increased with inflation.[13]

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11. The inflation rates of the GNE consumption deflator and of the GNE government deflator have differed considerably over the period 1963 to 1981. For example, on average through 1955 to 1959 the consumption deflator grew at an annual rate of 1.70 per cent and the government deflator grew at an annual rate of 4.25 per cent. Through 1975 to 1979 these deflators grew at average annual rates of 8.02 and 10.46 per cent, respectively.

12. This supports Bucovetsky's (1977) findings based on an analysis of tax legislation that indexation has not fully neutralized the personal tax base with respect to inflation.

13. Some policies which neutralize the effects of inflation on corporate taxes are: fast write-offs for depreciation, partial capital gains taxation, investment tax credits, business development bonds, et cetera.

5 OTHER SALIENT FEATURES OF CANADIAN FISCAL POLICY

Two additional features of our results are noteworthy. First, of the five economic indicators included in the analysis, the income gap was by far the most important determinant of movements in fiscal variables, followed second by inflation. Potential output growth, the real rate of interest, and real income per capita proved to be relatively unimportant as determinants of the fiscal variables considered.[14] In terms of the range of economic policy targets considered here, it appears that Canadian fiscal policy has been directed towards specific macro objectives.

Second, our estimates of the federal and provincial/municipal expenditure multipliers provide an interesting comparison. As in Candide 2.0 (Preston, Eyford, and Saiyed, 1981), we found the federal expenditure multiplier to be lower than the provincial/municipal multiplier. However, unlike Candide 2.0, our model actually produced a negative federal expenditure multiplier. The relevant multipliers are shown in Table 37 where we report the results of an innovation in the ratio of federal expenditure to GNE. While the point estimates of the resulting multipliers are not precise because of the naivety of the model, they do reflect the relationships among the variables. When income is at potential, the result of a real expenditure shock is a cumulative drop in income, and the resulting condition of excess supply drives inflation down. While it is impossible to "explain" this finding of a negative multiplier without using a structural model, these results are not inconsistent with the hypothesis that a positive shock to federal expenditure (when income is at potential) crowds out production more than one for one by driving up the real rate of interest. Indeed, in our model the real rate of interest does rise significantly under this shock, and does appear to be an important part of the transmission process.

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14. The low explanatory power of the real interest rate may be due to the fact that we measure it as an ex post rate. If innovations in inflation dominate the historical real interest rate series and inflation is ordered before the real rate of interest in the orthonormalizing transform, variations in the real interest rate will be attributed to movements in inflation. An examination of the orthonormalizing weighting matrix supports this contention.

6 SUMMARY

In this paper we have examined and estimated the relationships between Canadian fiscal policy variables and five economic indicators -- relationships that serve as a guide to the difficult task of econometric modelling of economic policy. An important finding is that both too much and too little aggregation serve to hide the true extent of policy endogeneity. Overaggregation tends to result in diluted measures of policy endogeneity because policies with dissimiliar characteristics are combined. Too much disaggregation results in an underestimate of policy endogeneity because many interdependencies are overlooked. While this result is important, we recognize that not all model-builders or users have the luxury of choosing their level of aggregation: some policy questions require a detailed model of policy institutions. With respect to this type of model, the implication of our findings is that many institutional aspects of policy are endogenous and treating them otherwise may produce serious inaccuracies which should be recognized.

From a policy analysis point of view, we discovered a number of interesting characteristics of Canadian fiscal policy over the past two decades. For example, responding to economic cycles in a contracyclical manner appears to have been the major objective of Canadian fiscal policy and, except for the transfer categories, such policy has, on balance, been effective. In addition, inflation has played an important role in determining the size of government revenues and expenditures: an increase in inflation tends to cause an increase in both receipts and expenditures measured in proportion to GNE. Moreover, because inflation causes government expenditures and transfers to increase more than revenues, it contributes to larger deficits. One surprising finding, given the growing literature on the importance of inflation-induced corporate tax distortions, is that in Canada corporate tax revenues as a proportion of GNE do not appear to have increased because of inflation. This finding may reflect less the absence of such distortions in Canada than the offsetting influence on corporate taxes of various discretionary tax cuts which occurred during the 1970s.

TABLES 3-39

LIST OF MNEMONICS

SGBALF	Federal surplus as a proportion of GNE
SGBALP	Provincial surplus as a proportion of GNE
SGBALL	Municipal surplus as a proportion of GNE
SGBALH	Hospital surplus as a proportion of GNE
SRTPF	Federal tax revenues from persons as a proportion of GNE
SRTPP	Provincial tax revenues from persons as a proportion of GNE
SRTCF	Federal tax revenues from corporations as a proportion of GNE
SRTCP	Provincial tax revenues from corporations as a proportion of GNE
SRTIF	Federal indirect tax revenues as a proportion of GNE
SRTIP	Provincial indirect tax revenues as a proportion of GNE
SRTIL	Municipal indirect tax revenues as a proportion of GNE
SRTOF	Other federal revenues as a proportion of GNE
SRTOP	Other provincial revenues as a proportion of GNE
SRTOL	Other municipal revenues as a proportion of GNE
SEGF	Federal expenditures on goods and services as a proportion of GNE
SEGP	Provincial expenditures on goods and services as a proportion of GNE
SEGL	Local expenditures on goods and services as a proportion of GNE
SEIF	Federal investment expenditures as a proportion of GNE
SEIP	Provincial investment expenditures as a proportion of GNE
SEIL	Municipal investment expenditures as a proportion of GNE
STPF	Federal transfers to persons as a proportion of GNE
STPP	Provincial transfers to persons as a proportion of GNE
STPL	Municipal transfers to persons as a proportion of GNE
STGF	Federal transfers to governments as a proportion of GNE
STGP	Provincial transfers to governments as a proportion of GNE
STGL	Municipal transfers to other governments as a proportion of GNE
STOF	Other federal transfers as a proportion of GNE
STOP	Other provincial transfers as a proportion of GNE
STOL	Other municipal transfers as a proportion of GNE
DNPGPP	Inflation
DNUGPD	Potential growth in output
GAP	Real income cycle (positive when actual exceeds potential)
RREAL	Ex post real rate of interest
YPOP	Real output per capita

Table 3

DESCRIPTIVE STATISTICS: MODEL 1

1963Q1-1981Q2

Category	Proportion of total variation explained	Proportion of explained variation accounted for by fiscal policy variables and economic indicators	F(14,51) statistics for significance of fiscal policy variables and economic indicators
SGBALF	.90	.65	4.67
SGBALP	.85	.51	3.50
SGBALL	.87	.23	2.31
SGBALH	.49	.38	1.38
DNPGPP	.69	.88	5.09
DNUGPD	.58	.89	2.78
GAP	.83	.97	12.52
RREAL	.87	.95	19.14
YPOP	.99	1.00	20.78

1972Q2-1981Q2

Category	Proportion of total variation explained	Proportion of explained variation accounted for by fiscal policy variables and economic indicators	F(14,18) statistics for significance of fiscal policy variables and economic indicators
SGBALF	.92	.71	3.49
SGBALP	.94	.75	4.04
SGBALL	.95	.49	2.85
SGBALH	.62	.39	1.68
DNPGPP	.75	.83	3.69
DNUGPD	.73	.87	1.78
GAP	.93	.98	5.92
RREAL	.96	.97	27.18
YPOP	.94	.99	5.38

$F_{.05}(14,18) = 2.29$

$F_{.05}(14,51) = 1.86$

Table 4

DESCRIPTIVE STATISTICS: MODEL 2

1963Q1-1981Q2

Category	Proportion of total variation explained	Proportion of explained variation accounted for by fiscal policy variables and economic indicators	F-statistic for significance of fiscal policy variables and economic indicators
SRTPF	.94	.97	9.05
SRTPP	.96	.97	3.84
SRTCF	.81	.89	9.13
SRTCP	.86	.92	13.72
SRTIF	.92	.86	13.75
SRTIP	.96	.84	7.29
SRTIL	.97	.93	58.47
SRTOF	.93	.90	8.62
SRTOP	.98	.96	9.42
SRTOL	.91	.92	2.68
SEGF	.88	.77	8.38
SEGP	.98	.97	6.64
SEGL	.97	.95	14.24
SEIF	.88	.79	6.58
SEIP	.93	.68	9.67
SEIL	.94	.86	2.40
STPF	.97	.92	23.26
STPP	.96	.97	6.62
STPL	.90	.97	10.40
STGF	.95	.95	5.75
STGP	.92	.97	2.68
STGL	.79	.93	3.15
STOF	.96	.99	7.94
STOP	.99	.99	5.36
STOL	.95	.97	6.28
DNPGPP	.75	.90	7.06
DNUGPD	.62	.86	3.47
GAP	.85	.98	14.57
RREAL	.90	.92	25.93
YPOP	.99	1.00	22.61

$F_{.05}(14,51) = 1.86$

Table 5

INNOVATION ACCOUNT: MODEL 1 - 1963Q1 TO 1981Q2
(Government relatively exogenous)

		Proportion of forecast error variance k quarters ahead produced by an innovation in:						
Forecast error in:	k	Own government balance *	Other government balances	DNPGPP	DNUGPD	GAP	RREAL	YPOP
SGBALP	1Q	.82	.17	.01	0	0	0	0
	1Y	.46	.54	0	0	0	0	0
	4Y	.28	.71	0	0	.01	0	0
SGBALP	1Q	.41	.59	0	0	0	0	0
	1Y	.31	.69	0	0	0	0	0
	4Y	.28	.70	0	0	.01	.01	0
SGBALL	1Q	.78	.22	0	0	0	0	0
	1Y	.74	.26	0	0	0	0	0
	4Y	.75	.25	0	0	0	0	0
SGBALR	1Q	.81	.19	0	0	0	0	0
	1Y	.84	.16	0	0	0	0	0
	4Y	.79	.21	0	0	0	0	0

		Proportion of forecast error variance k quarters ahead produced by an innovation in:						
Forecast error in:	k	Federal government balance	Provincial/ municipal government balances	DNPGPP	DNUGPD	GAP	RREAL	YPOP
DNPGPP	1Q	.04	.92	0	.01	.02	.01	0
	1Y	.10	.87	0	0	.02	.01	0
	4Y	.22	.77	0	0	0	.01	0
DNUGPD	1Q	.24	.45	.03	.03	.16	.09	0
	1Y	.09	.75	.01	.02	.09	.04	0
	4Y	.17	.80	0	0	.02	.01	0
GAP	1Q	0	.86	.03	0	.09	.02	0
	1Y	.35	.55	.02	0	.07	.01	0
	4Y	.47	.47	.01	0	.04	.01	0
RREAL	1Q	.25	.64	.03	.01	.04	.01	.02
	1Y	.14	.72	.04	0	.01	.07	.02
	4Y	.28	.53	.01	.01	.06	.08	.03
YPOP	1Q	0	.92	.02	0	.06	0	0
	1Y	.30	.65	.01	0	.04	0	0
	4Y	.37	.61	.01	0	0	.01	0

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 6

INNOVATION ACCOUNT: MODEL 1 - 1963Q1 TO 1981Q2
(Government relatively endogenous)

		Proportion of forecast error variance k quarters ahead produced by an innovation in:						
Forecast error in:	k	Own government balance *	Other government balances	DNPGPP	DNUGPD	GAP	RREAL	YPOP
SGBALF	1Q	.74	.18	0	0	.02	.05	.01
	1Y	.37	.56	.02	0	.01	.02	.02
	4Y	.24	.68	.02	.01	.02	.01	.02
SGBALP	1Q	.17	.65	.04	0	0	.12	.02
	1Y	.09	.79	.03	0	.01	.06	.02
	4Y	.09	.77	.03	.01	.02	.06	.02
SGBALL	1Q	.71	.22	.03	.02	0	.01	.01
	1Y	.72	.21	.03	.02	0	.01	.01
	4Y	.76	.18	.02	.02	0	.01	.01
SGBALH	1Q	.84	.07	.05	0	0	.02	.02
	1Y	.83	.09	.05	0	0	.01	.02
	4Y	.80	.11	.05	.01	0	.02	.01

		Proportion of forecast error variance k quarters ahead produced by an innovation in:						
Forecast error in:	k	Federal government balance	Provincial/ municipal government balances	DNPGPP	DNUGPD	GAP	RREAL	YPOP
DNPGPP	1Q	.01	.77	.03	0	0	.11	.08
	1Y	.08	.75	.02	.01	0	.08	.06
	4Y	.16	.68	.03	.01	0	.07	.05
DNUGPD	1Q	.22	.38	0	.13	.03	.02	.22
	1Y	.10	.68	.01	.06	.02	.04	.09
	4Y	.15	.70	.02	.03	.03	.03	.04
GAP	1Q	0	.86	.04	.01	0	.04	.05
	1Y	.27	.51	.02	0	0	.16	.04
	4Y	.36	.45	.03	.01	.01	.11	.03
RREAL	1Q	.23	.49	.04	.03	0	.17	.04
	1Y	.11	.53	.01	.10	.05	.19	.01
	4Y	.22	.49	.03	.07	.04	.09	.06
YPOP	1Q	0	.88	.04	0	.01	.05	.02
	1Y	.22	.55	.03	0	.01	.17	.02
	4Y	.27	.50	.04	.01	.01	.16	.01

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 7

INNOVATION ACCOUNT: MODEL 1 - 1972Q2 TO 1981Q2
(Government relatively exogenous)

Forecast error in:	k	Proportion of forecast error variance k quarters ahead produced by an innovation in: Own government balance *	Other government balances	DNPGPP	DNUGPD	GAP	RREAL	YPOP
SGBALF	1Q	.63	.31	.01	0	.03	.02	0
	1Y	.52	.44	.01	0	.02	.01	0
	4Y	.28	.72	0	0	0	0	0
SGBALP	1Q	0	.95	0	0	.03	.02	0
	1Y	.12	.82	.01	0	.03	.02	0
	4Y	.10	.89	0	0	.01	0	0
SGBALL	1Q	.84	.14	0	0	0	.02	0
	1Y	.69	.28	0	0	.01	.02	0
	4Y	.84	.16	0	0	0	0	0
SGBALH	1Q	.81	.19	0	0	0	0	0
	1Y	.69	.29	.01	0	0	.01	0
	4Y	.21	.79	0	0	0	0	0

Forecast error in:	k	Proportion of forecast error variance k quarters ahead produced by an innovation in: Federal government balance	Provincial/ municipal government balances	DNPGPP	DNUGPD	GAP	RREAL	YPOP
DNPGPP	1Q	.20	.70	0	0	.02	.08	0
	1Y	.55	.44	0	0	0	.01	0
	4Y	.09	.91	0	0	0	0	0
DNUGPD	1Q	.06	.24	.15	0	.28	.27	0
	1Y	.11	.72	.04	0	.06	.07	0
	4Y	.03	.97	0	0	0	0	0
GAP	1Q	.26	.71	.01	0	0	.02	0
	1Y	.26	.73	.01	0	0	0	0
	4Y	.04	.96	0	0	0	0	0
RREAL	1Q	.88	.08	0	0	.04	0	0
	1Y	.39	.51	.02	0	.03	.05	0
	4Y	.24	.73	.01	0	.01	.01	0
YPOP	1Q	.21	.76	.01	0	0	.02	0
	1Y	.25	.71	.01	0	0	.03	0
	4Y	.06	.93	0	0	.01	0	0

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 8

INNOVATION ACCOUNT: MODEL 1 - 1972Q2 TO 1981Q2
(Government relatively endogenous)

		Proportion of forward error variance k quarters ahead produced by an innovation in:						
Forecast error in:	k	Own government balance *	Other government balances	DNPGPP	DNUGPD	GAP	RREAL	YPOP
SGBALF	1Q	.22	.44	0	.05	.02	.09	.18
	1Y	.17	.58	0	.04	.02	.07	.12
	4Y	.08	.75	0	.02	.07	.07	.01
SGBALP	1Q	.05	.49	.01	0	.04	.11	.30
	1Y	.05	.62	0	0	.06	.13	.14
	4Y	.07	.77	0	.01	.11	.06	.05
SGBALL	1Q	.74	.08	0	.03	.06	0	.09
	1Y	.66	.11	0	.02	.07	.06	.08
	4Y	.60	.18	0	.01	.10	.06	.05
SGBALH	1Q	.67	.22	.01	0	.05	.04	.01
	1Y	.56	.31	.02	.03	.04	.03	.01
	4Y	.32	.52	.01	.04	.07	.04	0

		Proportion of forward error variance k quarters ahead produced by an innovation in:						
Forecast error in:	k	Federal government balance	Provincial/ municipal government balances	DNPGPP	DNUGPD	GAP	RREAL	YPOP
DNPGPP	1Q	.15	.82	0	0	.03	0	0
	1Y	.21	.54	0	.05	.02	.10	.08
	4Y	.03	.77	0	.01	.11	.06	.02
DNUGPD	1Q	.21	.39	.01	.10	0	.01	.29
	1Y	.04	.81	.02	.02	.01	.03	.07
	4Y	.01	.78	0	0	.11	.04	.06
GAP	1Q	.07	.77	.01	.01	.01	.11	.02
	1Y	.07	.83	.01	.02	.01	.10	.03
	4Y	.01	.80	.01	.01	.10	.04	.03
RREAL	1Q	.23	.14	.01	0	0	.44	.18
	1Y	.13	.56	.01	.05	.02	.14	.09
	4Y	.01	.80	.01	.03	.11	.02	.14
YPOP	1Q	.05	.82	.01	.03	.01	.07	.01
	1Y	.07	.74	.02	.04	.01	.09	.03
	4Y	.02	.75	.01	.01	.11	.04	.06

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 9

INNOVATION ACCOUNT: TAX REVENUES BY CATEGORY (ALL LEVELS OF GOVERNMENT) 1963Q1 to 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:									
Response of:	k	Own revenue category*	Other revenue categories	Government expenditures	Government transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP	Σ indicators
Total revenue	1Q	.00	-	.15	.00	.17	.02	.64	.00	.01	.84
	1Y	.00	-	.15	.00	.17	.02	.65	.00	.01	.85
	4Y	.01	-	.14	.00	.17	.02	.66	.00	.01	.86
Personal	1Q	.04	.10	.13	.03	.18	.02	.48	.00	.01	.69
	1Y	.05	.13	.14	.03	.18	.02	.45	.00	.01	.66
	4Y	.03	.16	.29	.06	.12	.01	.31	.00	.01	.45
Corporate	1Q	.71	.05	.05	.07	.03	.00	.08	.00	.00	.11
	1Y	.28	.10	.12	.10	.10	.01	.27	.00	.01	.39
	4Y	.15	.09	.08	.04	.17	.02	.43	.00	.01	.63
Indirect	1Q	.00	.16	.07	.03	.20	.02	.51	.00	.01	.74
	1Y	.03	.18	.11	.02	.17	.02	.45	00	.01	.65
	4Y	.02	.18	.10	.03	.18	.02	.46	.00	.01	.67
Other	1Q	.04	.24	.14	.02	.15	.02	.38	.00	.01	.56
	1Y	.04	.19	.09	.02	.18	.02	.45	.00	.01	.66
	4Y	.03	.16	.17	.03	.16	.02	.41	.00	.01	.60

* Note: Numbers in the own category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all categories within this innovation account grouping excluding the "own" innovation.

Table 10

INNOVATION ACCOUNT: FEDERAL TAX REVENUES 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:											
Response of:	k	Own revenue category*	Other federal revenue categories	Provincial/ municipal revenue categories	Federal expenditures	Provincial/ municipal expenditures	Transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP	Σ indicators
Federal tax revenues	1Q	.00	-	.01	.01	.16	.07	.10	.04	.60	.00	.01	.75
	1Y	.01	-	.01	.01	.18	.09	.09	.04	.56	.00	.01	.70
	4Y	.01	-	.03	.01	.29	.09	.07	.04	.46	.00	.01	.58
Personal	1Q	.07	.06	.31	.01	.15	.10	.06	.02	.20	.00	.01	.29
	1Y	.06	.08	.12	.02	.16	.17	.09	.02	.26	.00	.01	.38
	4Y	.05	.08	.08	.01	.21	.23	.08	.02	.23	.00	.01	.34
Corporate	1Q	.90	.02	.01	.05	.00	.02	.00	.00	.00	.00	.00	.00
	1Y	.35	.16	.06	.22	.04	.14	.01	.00	.02	.00	.00	.03
	4Y	.08	.09	.14	.05	.12	.30	.05	.01	.16	.00	.01	.23
Indirect	1Q	.51	.23	.05	.01	.16	.01	.01	.00	.02	.00	.00	.03
	1Y	.44	.11	.09	.02	.11	.21	.00	.00	.01	.00	.00	.01
	4Y	.02	.11	.07	.00	.20	.17	.10	.03	.30	.00	.01	.44
Other	1Q	.22	.13	.14	.09	.08	.08	.06	.02	.18	.00	.01	.27
	1Y	.14	.14	.14	.07	.10	.10	.07	.02	.21	.00	.01	.31
	4Y	.07	.15	.14	.02	.13	.24	.06	.01	.17	.00	.01	.25

* Note: Numbers in the own category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all categories within this innovation account grouping excluding the "own" innovation.

Table 11

INNOVATION ACCOUNT: PROVINCIAL TAX REVENUES 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:											
Response of:	k	Own revenue category*	Other provincial revenue categories	Federal/ municipal revenue categories	Provincial expenditures	Federal/ municipal expenditures	Transfers	DMPGPP	DMUGPD	GAP	RREAL	YPOP	Σ indicators
Provincial tax revenues	1Q	.03	-	.00	.32	.03	.07	.07	.03	.44	.00	.01	.55
	1Y	.01	-	.01	.31	.03	.04	.08	.04	.48	.00	.01	.61
	4Y	.01	-	.03	.29	.04	.14	.06	.03	.39	.00	.01	.49
Personal	1Q	.10	.04	.09	.09	.18	.27	.05	.01	.16	.00	.01	.23
	1Y	.08	.03	.10	.12	.19	.26	.05	.01	.15	.00	.01	.22
	4Y	.00	.04	.18	.20	.11	.43	.01	.00	.02	.00	.00	.03
Corporate	1Q	.21	.02	.60	.01	.03	.05	.02	.00	.05	.00	.00	.07
	1Y	.12	.04	.39	.05	.05	.09	.06	.02	.17	.00	.01	.26
	4Y	.08	.04	.33	.09	.05	.12	.06	.02	.20	.00	.01	.29
Indirect	1Q	.05	.06	.04	.33	.34	.10	.02	.01	.05	.00	.00	.08
	1Y	.04	.07	.15	.10	.20	.24	.04	.01	.14	.00	.00	.19
	4Y	.03	.02	.15	.12	.08	.36	.06	.01	.17	.00	.01	.25
Other	1Q	.18	.07	.20	.29	.02	.03	.05	.01	.15	.00	.01	.22
	1Y	.03	.03	.21	.18	.04	.07	.10	.02	.30	.00	.01	.43
	4Y	.01	.03	.19	.21	.09	.40	.01	.00	.05	.00	.00	.06

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response (innovation) grouping excluding the "own" innovation.

Table 12

INNOVATION ACCOUNT: MUNICIPAL GOVERNMENT TAX REVENUES 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:											
Response of:	k	Own revenue category*	Other municipal revenue categories	Federal/ provincial revenue categories	Municipal expenditures	Federal/ provincial expenditures	Transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP	Σ indicators
Municipal tax revenues	1Q	.07	-	.02	.02	.31	.11	.06	.03	.37	.00	.01	.47
	1Y	.05	-	.02	.03	.30	.12	.06	.03	.38	.00	.01	.48
	4Y	.02	-	.02	.03	.28	.12	.07	.03	.42	.00	.01	.53
Indirect	1Q	.00	.03	.27	.02	.04	.56	.02	.01	.06	.00	.00	.09
	1Y	.00	.03	.29	.02	.04	.38	.05	.01	.16	.00	.01	.23
	4Y	.00	.02	.23	.04	.14	.26	.07	.02	.20	.00	.01	.30
Other	1Q	.01	.31	.14	.03	.22	.08	.05	.01	.15	.00	.01	.22
	1Y	.01	.25	.18	.04	.20	.16	.04	.01	.12	.00	.00	.17
	4Y	.01	.09	.17	.06	.21	.24	.05	.01	.15	.00	.01	.22

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 13

INNOVATION ACCOUNT: TOTAL EXPENDITURES BY CATEGORY 1963Q1 TO 1981Q2

Response of:	k	Proportion of k step-ahead forecast error variance accounted for by an innovation in: Own expenditure category*	Other expenditure categories	Government revenues	Government transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP	Σ indicators
Total expenditures	1Q	.20	-	.00	.00	.16	.02	.61	.00	.01	.80
	1Y	.18	-	.00	.00	.16	.02	.62	.00	.01	.81
	4Y	.15	-	.00	.00	.17	.02	.65	.00	.01	.85
Goods and services	1Q	.12	.03	.20	.02	.17	.02	.43	.00	.01	.63
	1Y	.13	.02	.18	.05	.17	.02	.43	.00	.01	.63
	4Y	.08	.02	.21	.03	.18	.02	.45	.00	.01	.66
Investment	1Q	.42	.01	.16	.09	.08	.01	.21	.00	.01	.31
	1Y	.04	.06	.15	.07	.18	.02	.47	.00	.01	.68
	4Y	.05	.07	.22	.03	.17	.02	.43	.00	.01	.63

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 14

INNOVATION ACCOUNT: FEDERAL EXPENDITURES 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:											
Response of:	k	Own expenditure category*	Other federal expenditure categories	Provincial/ municipal expenditure categories	Federal revenues	Provincial/ municipal revenues	Transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP	Σ indicators
Federal expenditures	1Q	.03	-	.39	.02	.13	.07	.04	.04	.27	.00	.01	.36
	1Y	.09	-	.43	.06	.04	.04	.04	.02	.27	.00	.01	.34
	4Y	.02	-	.21	.01	.24	.29	.03	.01	.18	.00	.00	.22
Goods and services	1Q	.00	.55	.04	.02	.25	.04	.02	.01	.07	.00	.00	.10
	1Y	.07	.30	.14	.07	.16	.07	.04	.01	.14	.00	.00	.19
	4Y	.02	.08	.13	.15	.16	.29	.04	.01	.12	.00	.00	.17
Investment	1Q	.13	.01	.22	.22	.07	.08	.06	.02	.19	.00	.01	.28
	1Y	.06	.01	.19	.23	.06	.11	.08	.02	.23	.00	.01	.34
	4Y	.02	.02	.15	.20	.11	.23	.06	.02	.19	.00	.01	.28

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 15

INNOVATION ACCOUNT: PROVINCIAL EXPENDITURES 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:											
Response of:	k	Own expenditure category*	Other provincial expenditure categories	Federal/ municipal expenditure categories	Provincial revenues	Federal/ municipal revenues	Transfers	DWPGPP	DWUGPD	GAP	RREAL	YPOP	I indicators
Provincial expenditures	1Q	.50	-	.11	.01	.01	.09	.04	.02	.23	.00	.00	.29
	1Y	.43	-	.04	.01	.01	.12	.05	.02	.31	.00	.01	.39
	4Y	.26	-	.04	.02	.03	.18	.06	.03	.38	.00	.01	.48
Goods and services	1Q	.28	.06	.18	.01	.20	.13	.03	.01	.10	.00	.00	.14
	1Y	.23	.07	.07	.08	.27	.17	.02	.01	.08	.00	.00	.11
	4Y	.11	.05	.07	.06	.19	.30	.05	.01	.15	.00	.01	.22
Investment	1Q	.06	.29	.14	.07	.10	.24	.02	.01	.06	.00	.00	.09
	1Y	.02	.25	.07	.05	.13	.31	.04	.01	.12	.00	.00	.17
	4Y	.13	.11	.09	.04	.14	.30	.04	.01	.14	.00	.01	.20

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 16

INNOVATION ACCOUNT: MUNICIPAL GOVERNMENT EXPENDITURES 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:											
Response of:	k	Own expenditure category*	Other municipal expenditure categories	Federal/ provincial expenditure categories	Municipal revenues	Federal/ provincial revenues	Transfers	DWPGPP	DNUGPD	GAP	RREAL	YPOP	Σ indicators
Municipal expenditures	1Q	.01	-	.10	.04	.03	.41	.05	.02	.33	.00	.01	.41
	1Y	.00	-	.14	.04	.03	.31	.06	.03	.38	.00	.01	.48
	4Y	.03	-	.23	.04	.02	.20	.06	.03	.38	.00	.01	.48
Goods and services	1Q	.03	.05	.06	.03	.19	.63	.00	.00	.01	.00	.00	.01
	1Y	.02	.02	.06	.03	.23	.54	.02	.01	.07	.00	.00	.10
	4Y	.01	.04	.12	.03	.23	.41	.04	.01	.11	.00	.00	.16
Investment	1Q	.09	.10	.10	.04	.17	.49	.00	.00	.01	.00	.00	.01
	1Y	.05	.06	.06	.04	.21	.47	.02	.01	.08	.00	.00	.11
	4Y	.09	.02	.17	.03	.13	.47	.02	.01	.06	.00	.00	.09

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 17

INNOVATION ACCOUNT: TRANSFERS BY CATEGORY 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:									
Response of:	k	Own transfer category*	Other transfer categories	Government revenues	Government expenditures	DMPGPP	DNUGPD	GAP	RREAL	YPOP	Σ indicators
Total transfers	1Q	.02	-	.01	.24	.15	.02	.55	.00	.01	.73
	1Y	.00	-	.01	.17	.16	.02	.63	.00	.01	.82
	4Y	.00	-	.01	.13	.17	.02	.66	.00	.01	.86
To persons	1Q	.07	.08	.23	.18	.12	.01	.29	.00	.01	.43
	1Y	.01	.03	.20	.15	.16	.02	.41	.00	.01	.60
	4Y	.01	.03	.22	.13	.16	.02	.42	.00	.01	.61
To governments	1Q	.02	.00	.18	.28	.14	.02	.35	.00	.01	.52
	1Y	.03	.01	.18	.13	.17	.02	.44	.00	.01	.64
	4Y	.02	.01	.20	.10	.18	.02	.46	.00	.01	.67
Other	1Q	.28	.10	.60	.00	.01	.00	.01	.00	.00	.02
	1Y	.10	.08	.65	.05	.03	.00	.08	.00	.00	.11
	4Y	.01	.03	.24	.07	.17	.02	.44	.00	.01	.64

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 18

INNOVATION ACCOUNT: FEDERAL TRANSFERS 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:													
Response of:	k	Own transfer category*	Other federal transfer categories	Other provincial/ municipal transfer categories	Federal revenues	Provincial/ municipal revenues	Federal expenditures	Provincial/ municipal expenditures	DWPGPP	DWUGPD	GAP	RREAL	YPOP	Σ indicators
Federal transfers	1Q	.09	-	.03	.01	.10	.00	.43	.05	.02	.27	.00	.01	.35
	1Y	.01	-	.04	.00	.01	.00	.38	.07	.03	.44	.00	.01	.55
	4Y	.01	-	.22	.00	.15	.01	.24	.05	.02	.29	.00	.01	.37
To persons	1Q	.28	.07	.03	.08	.15	.09	.15	.04	.01	.11	.00	.00	.16
	1Y	.08	.05	.07	.11	.12	.06	.23	.06	.02	.19	.00	.01	.28
	4Y	.04	.03	.26	.13	.11	.02	.17	.06	.01	.17	.00	.01	.25
To governments	1Q	.00	.01	.05	.18	.19	.01	.39	.04	.01	.11	.00	.00	.16
	1Y	.01	.01	.09	.20	.08	.01	.26	.08	.02	.24	.00	.01	.35
	4Y	.01	.01	.10	.22	.09	.01	.23	.08	.02	.22	.00	.01	.33
Other	1Q	.13	.00	.06	.56	.07	.05	.07	.02	.00	.05	.00	.00	.07
	1Y	.04	.04	.06	.54	.14	.02	.06	.02	.01	.08	.00	.01	.12
	4Y	.01	.01	.22	.19	.14	.01	.13	.06	.02	.20	.00	.01	.29

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 19

INNOVATION ACCOUNT: PROVINCIAL TRANSFERS 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:												
Response of:	k	Own transfer category*	Other provincial transfer categories	Other federal/ municipal transfer categories	Provincial revenues	Federal/ municipal revenues	Provincial expenditures	Federal/ municipal expenditures	DNPGPP	DNUGPD	GAP	RREAL	YPOP	Σ
Provincial transfers	1Q	.05	-	.04	.01	.01	.26	.15	.06	.03	.38	.00	.01	.48
	1Y	.03	-	.05	.01	.07	.27	.06	.06	.03	.41	.00	.01	.51
	4Y	.02	-	.12	.01	.10	.23	.05	.06	.03	.38	.00	.01	.48
To persons	1Q	.25	.01	.28	.03	.12	.02	.20	.02	.01	.06	.00	.00	.09
	1Y	.18	.02	.20	.08	.15	.03	.14	.05	.01	.14	.00	.01	.21
	4Y	.08	.04	.25	.07	.23	.09	.10	.03	.01	.10	.00	.00	.14
To governments	1Q	.01	.05	.05	.07	.30	.19	.17	.04	.01	.11	.00	.00	.16
	1Y	.01	.05	.15	.12	.29	.14	.10	.03	.01	.10	.00	.00	.14
	4Y	.00	.05	.21	.10	.31	.10	.05	.04	.01	.13	.00	.00	.18
Other	1Q	.14	.04	.16	.21	.16	.10	.12	.02	.00	.05	.00	.00	.07
	1Y	.11	.02	.11	.12	.14	.10	.08	.08	.02	.22	.00	.01	.32
	4Y	.05	.05	.18	.07	.20	.15	.07	.05	.01	.15	.00	.01	.22

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 20

INNOVATION ACCOUNT: MUNICIPAL TRANSFERS 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:												
Response of:	k	Own municipal transfer category*	Other municipal transfer categories	Other federal/ provincial transfer categories	Municipal revenues	Federal/ provincial expenditures	Municipal expenditures	Federal/ provincial revenues	DNPGPP	DNUGPD	GAP	RREAL	YPOP	Σ
Municipal transfers	1Q	.68	-	.02	.03	.09	.01	.04	.02	.01	.11	.00	.00	.14
	1Y	.56	-	.02	.03	.08	.01	.08	.03	.01	.18	.00	.00	.22
	4Y	.21	-	.05	.02	.03	.02	.21	.06	.03	.36	.00	.01	.46
To persons	1Q	.01	.54	.02	.01	.27	.02	.05	.02	.00	.05	.00	.00	.07
	1Y	.06	.28	.04	.01	.26	.02	.09	.05	.01	.17	.00	.01	.24
	4Y	.02	.13	.10	.02	.19	.06	.17	.07	.02	.21	.00	.01	.31
To governments	1Q	.27	.14	.07	.06	.13	.08	.20	.01	.00	.03	.00	.00	.04
	1Y	.20	.11	.07	.04	.17	.06	.22	.03	.01	.08	.00	.00	.12
	4Y	.20	.15	.06	.05	.19	.06	.17	.03	.01	.09	.00	.00	.13
Other	1Q	.28	.15	.03	.01	.41	.01	.04	.02	.00	.06	.00	.00	.08
	1Y	.21	.24	.04	.02	.32	.01	.06	.02	.01	.07	.00	.00	.10
	4Y	.08	.14	.08	.03	.23	.04	.13	.06	.02	.19	.00	.00	.27

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 21

INNOVATION ACCOUNT: ECONOMIC INDICATORS 1963Q1 TO 1981Q2

		Proportion of k step-ahead forecast error variance accounted for by an innovation in:										
Response of:	k	Federal revenues	Provincial/ municipal revenues	Federal expenditures	Provincial/ municipal expenditures	Transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP	Σ government
DNPGPP	1Q	.25	.12	.01	.24	.14	.05	.01	.16	.02	.01	.76
	1Y	.22	.12	.03	.21	.13	.06	.02	.20	.00	.01	.71
	4Y	.21	.15	.02	.13	.31	.04	.01	.13	.00	.00	.82
DNUGPD	1Q	.09	.03	.44	.08	.14	.05	.02	.15	.00	.01	.78
	1Y	.14	.04	.25	.12	.16	.07	.02	.20	.00	.01	.71
	4Y	.18	.10	.05	.12	.42	.03	.01	.10	.00	.00	.87
GAP	1Q	.16	.03	.17	.11	.22	.07	.02	.22	.00	.01	.69
	1Y	.15	.06	.13	.13	.20	.07	.02	.22	.00	.01	.67
	4Y	.17	.12	.04	.10	.37	.04	.02	.13	.00	.00	.80
RREAL	1Q	.19	.08	.06	.17	.12	.08	.02	.26	.00	.01	.62
	1Y	.19	.07	.05	.16	.13	.09	.02	.27	.00	.01	.60
	4Y	.22	.09	.03	.18	.16	.07	.02	.23	.00	.01	.68
YPOP	1Q	.21	.07	.02	.18	.13	.09	.02	.27	.00	.01	.61
	1Y	.20	.05	.02	.19	.15	.09	.02	.27	.00	.01	.61
	4Y	.16	.07	.01	.19	.25	.07	.02	.22	.00	.01	.68

Table 22

SUMMARY OF INNOVATION ACCOUNT FOR GOVERNMENT POLICY VARIABLES
(One-year-ahead forecasts)

	Proportion of variance accounted for by:		
Category	Own past*	Other fiscal categories	Economic indicators
SGBALF	.46	.54	.00
SGBALP	.31	.69	.00
SGBALL	.74	.26	.00
SGBALH	.84	.16	.00
SRTPF	.06	.55	.38
SRTPP	.08	.70	.22
SRTCF	.35	.62	.03
SRTCP	.12	.62	.26
SRTIF	.44	.65	.01
SRTIP	.04	.77	.19
SRTIL	.00	.77	.23
SRTOF	.14	.65	.31
SRTOP	.03	.54	.43
SRTOL	.01	.82	.17
SEGF	.07	.74	.19
SEGP	.23	.66	.11
SEGL	.02	.88	.10
SEIF	.06	.60	.34
SEIP	.02	.81	.17
SEIL	.05	.84	.11
STPF	.08	.64	.28
STPP	.18	.61	.21
STPL	.06	.70	.24
STGF	.01	.64	.35
STGP	.01	.85	.14
STGL	.20	.68	.12
STOF	.04	.84	.12
STOP	.11	.57	.32
STOL	.21	.69	.10
Minimum	.00	.16	.00
Maximum	.84	.88	.43
Average	.17	.66	.18

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 23

CUMULATIVE MULTIPLIERS: MODEL 1 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own (or federal) government balance*	Other government balances	DNUGPP	DNUGPD	GAP	RREAL	YPOP
SGBALF	1Q	1.56	- .18	-.00	.02	.02	.01	.01
	1Y	1.61	.37	.05	.05	.09	- .05	.04
	4Y	.30	.47	.02	.02	.64	- .02	- .33
SGBALP	1Q	1.27	.26	-.02	.01	.01	.01	- .01
	1Y	1.32	- .01	-.02	.03	.23	.02	- .20
	4Y	1.11	- .21	-.05	.04	.34	- .00	- .38
SGBALL	1Q	.59	- .13	.91	- .02	.04	.00	- .02
	1Y	.21	- .15	.01	- .01	.03	.00	.01
	4Y	.60	- .02	.00	.00	.11	.02	- .12
SGBALH	1Q	.73	- .05	.00	- .00	.02	- .00	- .01
	1Y	.96	- .06	.00	- .00	.04	- .00	- .03
	4Y	.84	- .15	.00	- .02	- .12	- .02	.13
DNPGPP	1Q	1.19	3.25	.78	- .24	- .75	.33	1.56
	1Y	- 1.32	2.98	1.14	- .19	- 3.79	- .13	5.60
	4Y	-10.02	-1.11	.81	-1.20	- 6.40	- .34	8.76
DNUGPD	1Q	- .50	.48	-.06	.73	.43	- .20	.09
	1Y	- .42	-1.11	-.02	.40	.27	- .40	.92
	4Y	- .26	1.50	-.00	.78	2.58	-6.40	- 1.61
GAP	1Q	- .15	-1.27	-.02	.08	1.62	- .14	.10
	1Y	- 3.91	-2.40	-.00	- .09	.53	- .80	1.59
	4Y	- 4.35	-3.13	-.01	- .27	.02	- .39	1.36
RREAL	1Q	.21	- .23	-.09	.09	.45	1.21	- .54
	1Y	.95	.64	-.41	.24	2.66	1.45	- 2.88
	4Y	5.07	1.99	-.49	1.28	9.11	1.94	-10.07
YPOP	1Q	- .48	-1.92	-.05	.03	- .35	- .21	2.17
	1Y	- 4.40	-5.12	-.11	- .55	- 3.81	-1.27	7.40
	4Y	- 4.33	-8.52	.24	-1.52	-11.61	-1.32	13.89

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 24

CUMULATIVE MULTIPLIERS: MODEL 1 1972Q2 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own (or federal) government balance*	Other government balances	DNPGPP	DNUGPD	GAP	RREAL	YPOP
SGBALF	1Q	1.49	- .50	-.01	.05	.27	- .08	- .06
	1Y	1.37	- .97	.01	.02	- .14	- .23	.43
	4Y	.43	8.93	.12	.25	3.12	.16	-2.89
SGBALP	1Q	1.00	.34	-.02	.02	.18	.16	- .08
	1Y	.80	- .18	.01	.10	1.08	.22	- .69
	4Y	.75	1.02	.04	.04	.42	- .03	- .43
SGBALL	1Q	.52	- .14	.02	- .02	.04	- .06	- .04
	1Y	.47	- .04	.00	- .03	- .11	- .01	.04
	4Y	-3.19	- 1.08	-.04	.06	.11	.14	.09
SGBALH	1Q	.75	- .07	.02	- .00	.07	.03	- .06
	1Y	.65	.00	-.00	.01	.08	.01	- .08
	4Y	-1.43	- .88	-.03	.02	- .26	- .03	.34
DNPGPP	1Q	- .90	2.23	.54	- .26	-1.32	.41	2.23
	1Y	7.54	- 8.94	.98	- .02	-2.67	1.64	4.40
	4Y	-2.77	-18.08	.46	2.88	7.79	-1.48	- .05
DNUGPD	1Q	- .87	.78	-.20	4.20	2.12	- .80	- .57
	1Y	- .28	2.22	-.05	.83	2.67	- .41	-1.36
	4Y	.67	- 8.73	-.05	1.07	3.90	1.23	-2.10
GAP	1Q	.30	- 2.05	.13	- .09	1.61	.40	.12
	1Y	- .09	- 2.96	.05	- .01	.16	.26	.88
	4Y	-3.48	- 5.62	-.09	- .62	-4.71	-1.05	3.71
RREAL	1Q	.78	- .26	.05	.15	1.20	1.44	-1.03
	1Y	1.86	1.99	-.02	.50	5.96	1.68	-5.01
	4Y	2.32	- 1.68	.31	- .75	-2.60	1.47	- .19
YPOP	1Q	.10	- 2.05	.09	- .09	- .47	.22	1.64
	1Y	- .97	- 2.86	.01	- .14	-1.99	- .22	2.46
	4Y	-8.47	- 5.91	-.62	-1.35	-9.11	-2.89	7.43

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 25

CUMULATIVE MULTIPLIERS: TAX REVENUES BY CATEGORY 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own revenue category*	Other revenue categories	Government expenditures	Government transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP
Total revenues	1Q	.85	-	.18	-.05	-.02	.01	.14	.03	-.22
	1Y	.76	-	.32	-.15	-.00	.17	.71	.19	-.89
	4Y	.80	-	-.52	.32	.05	.08	.62	.17	-.86
Personal	1Q	.94	-.00	.11	-.04	-.03	-.00	.05	-.02	-.09
	1Y	.78	-.02	.60	-.29	-.02	.02	.29	.04	-.37
	4Y	2.27	.05	-2.74	-.09	.08	.03	.19	.08	-.37
Corporate	1Q	1.50	-.04	- .05	.08	.00	.01	.00	.01	.01
	1Y	1.81	-.12	- .32	.39	.02	.02	-.01	.02	.06
	4Y	2.00	-.17	- .10	.94	.00	.00	.01	.05	.15
Indirect	1Q	1.12	.07	- .24	-.04	-.00	.00	.01	.00	-.03
	1Y	.92	-.05	- .07	-.07	-.01	.03	.09	.04	-.13
	4Y	1.32	.37	- .24	-.17	.03	.00	.58	.10	-.72
Other	1Q	.96	-.23	.31	.01	.01	.00	.08	.04	-.11
	1Y	.98	-.02	- .09	-.09	.02	.09	.35	.09	-.45
	4Y	.25	-.74	2.97	-.15	-.06	-.07	-.16	-.07	.09

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 26

CUMULATIVE MULTIPLIERS: FEDERAL TAX REVENUES 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own revenue category*	Other federal revenue categories	Provincial/ municipal revenue categories	Federal expenditures	Provincial/ municipal expenditures	Federal transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP
Federal tax revenues	1Q	1.41	-	-.23	.03	- .39	.09	-.00	.01	.05	.01	- .08
	1Y	1.40	-	.48	.09	-1.13	.65	.05	.08	.25	.07	- .29
	4Y	1.59	-	.10	- .16	- .59	.57	.06	.18	1.31	.23	-1.27
Personal	1Q	1.25	.45	-.31	.27	- .05	.09	-.01	-.01	.01	.01	- .05
	1Y	1.48	.62	-.55	- .12	- .69	.22	.03	.02	.02	.04	- .24
	4Y	2.30	2.89	.05	1.06	-1.68	-.67	.09	.20	1.10	.14	-1.05
Corporate	1Q	1.54	-.07	.00	- .10	- .00	.05	.00	.01	.01	.01	.00
	1Y	1.86	-.35	.07	- .61	- .15	.43	.01	.02	.02	.02	.01
	4Y	1.33	-.83	.09	- .88	.81	.80	-.01	-.04	-.12	.03	.23
Indirect	1Q	.74	.04	.06	.21	- .30	-.02	-.00	.01	.00	-.01	- .01
	1Y	3.16	.20	-.24	.66	- .60	-.00	.00	.04	.02	-.02	- .02
	4Y	10.47	.83	.81	-1.39	-3.72	-.34	.13	.39	1.73	.19	-1.71
Other	1Q	.45	-.01	.01	.19	- .04	-.03	.01	.01	.02	.01	- .02
	1Y	.05	-.02	.11	.40	- .14	-.08	.01	.02	.07	.01	- .07
	4Y	.51	-.50	-.01	.44	.36	-.08	-.01	-.02	.08	.01	- .07

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 27

CUMULATIVE MULTIPLIERS: PROVINCIAL TAX REVENUES 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own revenue category*	Other provincial revenue categories	Federal/ municipal revenue categories	Provincial expenditures	Federal/ municipal expenditures	Provincial transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP
Provincial tax revenues	1Q	1.30	-	-.06	.17	.11	- .19	-.01	.01	.04	.01	-.07
	1Y	1.67	-	-.26	.54	.58	.24	-.03	.10	.34	.01	-.43
	4Y	-.35	-	-.64	-2.51	.20	1.52	-.00	-.03	-.42	-.02	.15
Personal	1Q	.61	.22	-.13	.07	.30	- .38	-.02	.00	.04	-.03	-.04
	1Y	.76	.80	-.29	.57	1.06	-1.29	-.05	.01	.01	-.01	-.14
	4Y	2.96	-2.12	.46	-3.17	-2.02	- .90	.02	-.08	-.52	-.04	.28
Corporate	1Q	1.47	.00	-.02	.02	- .04	.04	.00	.00	-.00	.00	.01
	1Y	2.03	.01	-.08	.08	- .02	.08	.00	-.00	-.04	.00	.05
	4Y	3.14	.01	-.19	.31	.00	.18	-.01	-.01	-.10	.01	.14
Indirect	1Q	.96	.02	.01	- .18	- .05	- .04	-.00	-.00	-.00	.01	-.00
	1Y	.75	- .18	.05	- .33	.07	.01	-.01	.00	.02	.02	-.03
	4Y	.89	- .13	.32	- .40	- .43	- .10	.01	.05	.18	.03	-.24
Other	1Q	1.31	.01	.08	.26	- .09	.19	.01	.01	.01	.03	-.03
	1Y	1.14	.45	.13	.08	- .62	1.22	.02	.09	.22	.07	-.31
	4Y	1.39	- .99	-.76	1.47	3.09	1.37	-.05	-.02	-.10	-.04	.08

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 28

CUMULATIVE MULTIPLIERS: MUNICIPAL GOVERNMENT TAX REVENUES 1963Q1 TO 1981Q2

		Innovation in:										
Response of:	Elapsed time	Own revenue category*	Other municipal revenue categories	Federal/ provincial revenue categories	Municipal expenditures	Federal/ provincial expenditures	Municipal transfers	DNPGPP	DMUGPD	GAP	RREAL	YPOP
Municipal tax revenues	1Q	-.03	-	-.12	.21	.32	- .94	.00	-.02	.05	.01	-.07
	1Y	-.05	-	-.02	.62	.29	-1.45	-.02	-.02	.12	.03	-.16
	4Y	.47	-	-.42	.01	.45	-1.14	-.01	-.06	-.27	-.04	.13
Indirect	1Q	1.16	.06	-.01	.04	-.02	- .63	-.00	-.00	.01	.01	-.02
	1Y	1.13	.32	-.00	-.01	-.08	-1.65	-.01	.00	.06	.03	-.09
	4Y	1.00	- .03	-.26	.27	.36	-1.18	-.02	-.04	-.14	-.01	.06
Other	1Q	.76	-1.73	-.11	.17	.33	- .30	.00	-.02	.04	.00	-.05
	1Y	.69	-1.87	-.05	.49	.39	.18	-.01	-.02	.06	.01	-.07
	4Y	-.03	- .46	-.48	.18	.39	- .76	-.01	-.06	-.27	-.04	.21

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 29

CUMULATIVE MULTIPLIERS: EXPENDITURES BY CATEGORY 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own expenditure category*	Other expenditure categories	Government revenues	Government transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP
Total expenditures	1Q	1.17	-	.06	- .07	-.01	-.01	.02	-.02	-.05
	1Y	1.73	-	.38	- .85	-.05	.00	.16	.02	-.27
	4Y	.53	-	.22	- .80	.04	-.04	-.58	-.06	.33
Goods and services	1Q	1.18	.07	.01	- .05	-.01	-.00	.02	.00	-.04
	1Y	1.95	.06	.23	- .59	-.02	-.01	.13	.03	-.21
	4Y	.94	-1.19	.34	-1.10	.03	-.02	-.47	-.02	.22
Investment	1Q	1.16	- .03	.06	.01	-.01	-.00	.00	-.02	-.01
	1Y	1.12	- .10	.23	- .22	-.03	.01	.04	-.01	-.06
	4Y	.00	- .03	-.10	- .14	.01	-.03	-.11	-.04	.12

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 30

CUMULATIVE MULTIPLIERS: FEDERAL EXPENDITURES 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own expenditure category*	Other federal expenditure categories	Provincial/ municipal expenditure categories	Federal revenues	Provincial/ municipal revenues	Federal transfers	DMPGPP	DNUGPD	GAP	RREAL	YPOP
Federal expenditures	1Q	.97	-	.05	.06	.04	.06	-.00	-.01	.02	-.01	-.01
	1Y	1.32	-	.33	.31	-.18	-.16	-.01	.00	.02	.00	-.03
	4Y	1.19	-	- .74	.82	-.11	-.31	.02	.04	-.04	-.01	-.04
Goods and services	1Q	.92	.97	.05	.06	.04	.04	-.00	-.01	.03	-.01	-.02
	1Y	1.31	1.51	.26	.25	-.12	-.17	-.01	.00	.05	.01	-.06
	4Y	1.27	3.04	-1.05	1.22	-.38	-.37	.03	.06	.12	-.01	-.19
Investment	1Q	1.16	-.01	.00	-.00	.00	.02	-.00	-.00	-.01	-.00	.01
	1Y	1.40	-.09	.07	.06	-.01	.01	-.01	-.00	-.04	-.01	.04
	4Y	1.20	-.20	- .15	.36	-.08	.09	.01	.02	-.02	-.01	.01

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 31

CUMULATIVE MULTIPLIERS: PROVINCIAL EXPENDITURES 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own expenditure category*	Other provincial expenditure categories	Federal/ municipal expenditure categories	Provincial revenues	Federal/ municipal revenues	Provincial transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP
Provincial expenditures	1Q	1.34	-	.20	.04	-.08	- .22	-.00	.00	.01	-.01	-.02
	1Y	2.23	-	.40	.18	.17	-1.17	-.01	-.01	.07	-.01	-.10
	4Y	1.16	-	-.30	- .90	.72	- .43	.03	-.03	-.35	-.01	.29
Goods and services	1Q	1.25	- .20	.14	- .02	-.08	- .08	-.00	.00	-.01	-.00	-.01
	1Y	2.41	- .91	.35	- .01	.10	- .58	-.01	-.01	.02	.00	-.06
	4Y	1.53	-3.28	.30	-1.15	.68	- .11	.02	-.01	-.03	-.02	.25
Investment	1Q	1.19	.25	.06	.07	.00	- .14	-.00	-.00	.01	-.01	-.01
	1Y	1.09	.82	.10	.17	-.01	- .62	-.01	.00	.05	-.01	-.05
	4Y	-.29	2.50	-.31	.11	-.13	- .89	.00	-.03	-.07	-.00	.11

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 32

CUMULATIVE MULTIPLIERS: MUNICIPAL GOVERNMENT EXPENDITURES 1963Q1 TO 1981Q2

		Innovation in:										
Response of:	Elapsed time	Own expenditure category*	Other municipal expenditure categories	Federal/ provincial expenditure categories	Municipal revenues	Federal/ provincial revenues	Municipal transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP
Municipal expenditures	1Q	.76	-	-.06	.12	.05	- .64	-.00	.00	.01	-.01	-.02
	1Y	.56	-	-.08	.75	.11	-3.44	-.02	.01	.08	.03	-.14
	4Y	.74	-	.23	-.36	-.16	- .59	-.00	-.05	-.19	-.04	.08
Goods and services	1Q	1.04	-.19	.02	.02	.03	-1.24	-.00	.00	-.00	.01	-.01
	1Y	1.23	-.20	.05	.25	.05	-2.99	-.01	-.00	.05	.02	-.09
	4Y	.94	-.60	.34	-.16	.04	-1.80	.00	-.02	-.14	-.01	.05
Investment	1Q	1.15	-.20	-.08	.10	.02	.60	-.00	.00	-.00	-.00	-.01
	1Y	.90	-.73	-.17	.51	.07	- .46	-.01	.01	.03	.01	-.05
	4Y	1.42	-.30	.14	-.16	-.18	1.46	-.01	-.02	-.03	-.03	.01

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 33

CUMULATIVE MULTIPLIERS: TRANSFERS BY CATEGORY 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own transfer category*	Other transfer categories	Government revenues	Government expenditures	DNPGPP	DNUGPD	GAP	RREAL	YPOP
Total transfers	1Q	1.29	-	.01	.53	.02	-.02	.07	-.01	-.09
	1Y	.77	-	.44	.81	.00	.05	.29	.12	-.46
	4Y	.62	-	1.47	-.61	.09	.19	.26	.12	-.54
To persons	1Q	1.50	.24	-.10	.15	.00	-.00	.03	-.01	-.04
	1Y	1.81	.43	-.09	.52	.00	.01	.17	.05	-.22
	4Y	1.26	.29	.10	-.02	.06	.02	.28	.07	-.36
To governments	1Q	.91	.04	-.04	.45	.01	-.00	.06	-.01	-.06
	1Y	.45	-.38	.25	.52	-.01	.06	.20	.05	-.27
	4Y	1.10	-.56	.46	.02	.03	.04	-.31	-.02	.14
Other	1Q	1.26	-.07	.14	-.08	.00	-.01	-.01	-.00	-.18
	1Y	1.13	-.34	.44	-.16	.01	-.02	-.08	.02	.02
	4Y	-.14	-.59	1.01	-.29	.00	.00	.30	.07	-.32

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 34

CUMULATIVE MULTIPLIERS: FEDERAL TRANSFERS 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own transfer category*	Other federal transfer categories	Other provincial/ municipal transfer categories	Federal revenues	Provincial/ municipal revenues	Federal expenditures	Provincial/ municipal expenditures	DNPGPP	DNUGPD	GAP	RREAL	YPOP
Federal transfers	1Q	1.44	-	-.06	.18	.09	.07	.29	.01	-.00	.03	.00	-.04
	1Y	1.11	-	-.01	.94	-.43	.15	.81	.02	.03	.20	.08	-.27
	4Y	.27	-	-.62	1.96	.33	.77	-1.09	.07	.15	.37	.13	-.43
To persons	1Q	1.54	.25	.00	-.03	-.05	.27	.05	.00	.01	.03	.00	-.02
	1Y	2.00	.66	-.09	.11	-.26	.69	.42	.01	.02	.17	.03	-.15
	4Y	2.24	.82	-.47	1.77	-.93	1.01	-1.25	.08	.09	.46	.07	-.45
To governments	1Q	1.04	- .00	-.03	.02	.11	-.08	.30	.01	.00	.02	.01	-.03
	1Y	.41	- .29	-.18	.00	.13	-.24	.46	-.00	.04	.16	.04	-.20
	4Y	.77	.11	-.15	.68	-.81	.98	- .12	.00	-.01	-.24	-.02	.17
Other	1Q	1.44	- .11	-.03	.19	.04	-.12	- .07	.00	-.02	-.02	-.01	.01
	1Y	1.19	- .65	.16	.93	-.13	-.39	- .18	.01	-.04	-.13	.01	.08
	4Y	-.68	-1.60	.28	1.52	1.49	-.64	-1.64	.05	.22	.66	.10	-.66

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 35

CUMULATIVE MULTIPLIERS: PROVINCIAL TRANSFERS 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own transfer category*	Other provincial transfer categories	Other federal/ municipal transfer categories	Provincial revenues	Federal/ municipal revenues	Provincial expenditures	Federal/ municipal expenditures	DNPGPP	DNUGPD	GAP	RREAL	YPOP
Provincial transfers	1Q	.95	-	.21	-.06	-.17	-.00	.43	.01	-.01	.03	-.02	-.05
	1Y	1.01	-	-.60	-.02	.41	.34	.23	-.02	.02	.08	.03	-.16
	4Y	1.17	-	-.62	-.82	.90	-.72	-.08	.02	.04	-.11	-.02	-.09
To persons	1Q	.62	-.03	.18	-.04	-.07	-.16	.14	-.00	-.01	-.01	-.01	-.01
	1Y	.42	-.14	.03	-.00	-.05	-.26	.17	-.01	-.01	-.00	.01	-.05
	4Y	-.20	-.45	.15	-.34	.12	-.46	.71	.00	-.01	-.07	-.03	-.01
To governments	1Q	.84	.54	.01	-.07	-.10	.26	.24	.01	-.00	.00	-.01	-.03
	1Y	.36	1.36	-.63	-.10	.32	.76	.21	-.01	.02	.05	.02	-.08
	4Y	.96	1.70	-.83	-.79	1.12	.30	-.19	.02	.06	-.12	-.02	.03
Other	1Q	.90	-.01	.03	.06	-.00	-.10	.04	.00	.00	-.00	.00	-.00
	1Y	1.38	.13	-.01	.08	.02	-.10	-.01	-.00	.01	.02	.01	-.03
	4Y	2.25	.21	.36	-.01	.51	-.40	.10	.01	.02	.09	.01	-.11

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 36

CUMULATIVE MULTIPLIERS: MUNICIPAL TRANSFERS 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Own transfer category*	Other municipal transfer categories	Other federal/ provincial transfer categories	Municipal revenues	Federal provincial revenues	Municipal expenditures	Federal/ provincial expenditures	DNPGPP	DNUGPD	GAP	RREAL	YPOP
Municipal transfers	1Q	.39	-	-.02	.06	-.01	-.01	.02	-.00	.00	.01	.00	-.01
	1Y	.10	-	-.05	.12	-.00	.01	.03	-.00	.01	.02	.01	-.03
	4Y	.42	-	-.08	.04	-.06	.08	.10	-.00	-.00	-.00	-.00	-.01
To persons	1Q	.99	-.11	.00	.01	.00	-.00	-.01	.00	-.00	-.00	.00	-.00
	1Y	.91	-.20	-.01	-.02	.01	-.00	.01	.00	.00	.01	.00	-.01
	4Y	.02	-.09	-.04	.02	.02	-.02	.00	.00	.00	.03	.01	-.03
To governments	1Q	.85	-.09	.00	-.02	-.00	.00	.00	-.00	-.00	-.00	.00	.00
	1Y	.68	-.07	.00	-.02	-.00	.03	.01	-.00	-.00	-.01	-.00	.01
	4Y	.63	-.12	-.02	.07	.02	-.07	.00	.00	.00	.00	.00	-.01
Other	1Q	.38	-.14	-.02	.07	-.01	-.01	.03	-.00	.00	.01	.00	-.01
	1Y	.41	-.72	-.04	.16	-.01	.02	.01	-.00	.01	.03	.00	-.03
	4Y	.52	-.46	-.06	.00	-.16	.27	.17	-.01	-.02	-.05	-.01	.04

* Note: Numbers in the "own" category describe the response of a variable to an innovation to itself. The "other" category refers to a composite innovation to all variables within this response grouping excluding the "own" innovation.

Table 37

CUMULATIVE MULTIPLIERS: ECONOMIC INDICATORS 1963Q1 TO 1981Q2

Response of:	Elapsed time	Innovation in: Federal revenues	Provincial/ municipal revenues	Federal expenditures	Provincial/ municipal expenditures	Transfers	DNPGPP	DNUGPD	GAP	RREAL	YPOP
DNPGPP	1Q	2.23	5.86	3.88	69	-7.64	.83	-.14	- .17	.50	1.07
	1Y	1.05	9.00	2.94	-4.25	-2.35	1.16	.16	-1.96	-.09	3.81
	4Y	-11.52	9.46	-16.04	12.59	13.27	.13	-.87	-2.81	-.08	6.03
DNUGPD	1Q	.49	- .15	5.72	1.43	-1.73	-.09	.72	1.11	-.45	- .32
	1Y	2.36	- .03	6.09	3.84	-2.39	-.03	.46	1.01	-.45	.32
	4Y	- .75	10.71	-16.27	-4.71	-9.55	.16	1.53	3.80	.43	-3.09
GAP	1Q	- .46	- .69	- 2.29	- .68	1.62	-.01	.11	1.21	.04	.26
	1Y	-2.66	- .06	-11.07	-5.20	5.86	-.04	.07	- .36	-.41	1.81
	4Y	-8.42	-8.92	-21.91	14.34	16.18	-.89	-.87	1.39	.32	.09
RREAL	1Q	.29	-1.52	2.93	- .04	- .25	-.13	.09	.70	1.02	- .68
	1Y	.45	-2.56	9.27	-1.16	-1.77	-.39	.12	2.50	.18	2.53
	4Y	-5.29	-4.91	17.16	-1.43	-6.80	-.18	-.05	4.29	1.14	-6.15
YPOP	1Q	- .01	- .04	- .02	- .01	.05	-.00	.00	- .02	-.00	1.03
	1Y	- .02	- .06	- .04	- .07	.31	-.00	-.01	- .11	.03	1.17
	4Y	.35	- .48	- .52	.07	.84	.01	-.01	- .00	-.00	1.03

Table 38

SUMMARY OF THE STABILIZING PROPERTIES OF CANADIAN FISCAL POLICY

Fiscal Category	Effect after one year	Effect after four years
Federal deficit	unresponsive	unresponsive
Federal revenues	effective	effective
From: Persons	effective	effective
Corporate	unresponsive	ineffective
Indirect	unresponsive	effective
Other	effective	effective
Federal expenditures	effective	unresponsive
On: Goods and services	effective	unresponsive
Investment	effective	unresponsive
Federal transfers	ineffective	ineffective
To: Persons	ineffective	ineffective
Governments	ineffective	effective
Other	unresponsive	ineffective
Provincial deficit	unresponsive	unresponsive
Provincial revenues	unresponsive	ineffective
From: Persons	unresponsive	unresponsive
Corporate	unresponsive	ineffective
Indirect	unresponsive	effective
Other	unresponsive	unresponsive
Provincial expenditures	effective	effective
On: Goods and services	unresponsive	effective
Investment	effective	effective
Provincial transfers	ineffective	effective
To: Persons	effective	effective
Government	ineffective	effective
Other	ineffective	ineffective

Table 38 (cont'd)

Fiscal Category	Effect after one year	Effect after four years
Municipal deficit	unresponsive	unresponsive
Municipal revenues	unresponsive	ineffective
From: Indirect	unresponsive	ineffective
Other	unresponsive	ineffective
Municipal expenditures	effective	effective
On: Goods and services	unresponsive	effective
Investment	unresponsive	unresponsive
Municipal transfers	ineffective	ineffective
To: Persons	ineffective	ineffective
Governments	unresponsive	unresponsive
Other	unresponsive	effective
Aggregate government revenues	effective	effective
From: Persons	effective	effective
Corporate	ineffective	effective
Indirect	effective	effective
Other	effective	ineffective
Aggregate government expenditures	effective	ineffective
On: Goods and services	effective	ineffective
Investment	effective	ineffective
Aggregate government transfers	ineffective	ineffective
To: Persons	ineffective	effective
Governments	ineffective	effective
Other	unresponsive	ineffective

Table 39

SUMMARY OF THE RESPONSE OF GOVERNMENT SIZE TO INFLATION

	Proportion of four-year-ahead forecast error variance produced by an innovation in inflation	Magnitude of cumulative response after four years
Total revenues	.17	.05
From: Persons	.12	.08
Corporate	.17	.00
Indirect	.18	.03
Other	.16	-.06
Federal revenues	.07	.06
From: Persons	.08	.09
Corporate	.05	-.01
Indirect	.10	.13
Other	.06	-.01
Provincial revenues	.06	.00
From: Persons	.01	.02
Corporate	.06	-.01
Indirect	.06	.01
Other	.01	-.05
Municipal revenues	.07	-.01
From: Indirect	.07	-.02
Other	.05	-.01
Total expenditures	.17	.04
On: Goods and services	.18	.03
Investment	.17	.01
Federal expenditure	.03	.02
On: Goods and services	.04	.03
Investment	.06	.01

Table 39 (cont'd)

	Proportion of four-year-ahead forecast error variance produced by an innovation in inflation	Magnitude of cumulative response after four years
Provincial expenditure	.06	.03
On: Goods and services	.05	.02
Investment	.04	.00
Municipal expenditure	.06	.00
On: Goods and services	.04	.00
Investment	.02	-.01
Total transfers	.17	.09
To: Persons	.16	.06
Governments	.18	.03
Other	.17	.00
Federal transfers	.05	.07
To: Persons	.06	.08
Governments	.08	.00
Other	.06	.05
Provincial transfers	.06	.02
To: Persons	.03	.00
Governments	.04	.02
Other	.05	.01
Municipal transfers	.06	.00
To: Persons	.07	.00
Governments	.03	.00
Other	.06	-.01

APPENDIX

In postwar Canada there have been significant and divergent trends in the provision and financing of government services by the various levels of government. This is indicated in Table A-2 where we provide a comparison of government expenditures, transfers, and revenues by level of government from 1955 to 1979. To put the evolution of government financing in perspective, we present five-year averages of the various fiscal instruments as a proportion of gross national expenditure (GNE). The share of gross national expenditure of all three levels of government rose from 19.2 per cent in the late 1960s to 23.6 per cent in the late 1970s. This rise masks an even more dramatic switch between federal and provincial-municipal governments (including the hospital sector). Federal expenditure on goods and services as a proportion of GNE has declined continuously over the period, whereas provincial-municipal-hospital expenditure has risen from a point roughly equal to the federal level from 1955 to 1959 to a level three times as great. While all levels of government have increased their proportionate spending on transfer programs, provincial-municipal governments (including hospitals) have again increased their spending more rapidly. In 1979, total federal/provincial/municipal spending including transfers constituted 45 per cent of GNE, as compared with an average 29 per cent of GNE throughout the 1955-59 period. By comparison, the total spending of the federal government including transfers increased from 16.9 per cent of GNE in 1955-1959 to 20.9 per cent in 1975-1979, whereas total provincial-municipal-hospital spending doubled over the same period to its current level of 24 per cent of GNE.

At the more disaggregated level presented in Table A-3, it is worth noting that the decline in federal expenditures as a proportion of GNE was not uniformly spread among investment expenditures, wage expenditures and non-wage expenditures. The latter category bore most of the burden of the decline while wage expenditures increased from 1.6 per cent during 1955-59 to 2.0 per cent over 1975-79; investment expenditures remained relatively constant as a proportion of GNE. For provincial and

municipal governments including hospitals, on the other hand, non-wage expenditures have led the proportionate spending increase.

In constant dollars, the total government share of gross national expenditure actually declined over the 1955-79 period. Even though constant dollar provincial-municipal-hospital expenditures increased during this period, the increase was more than offset by the decline in constant dollar federal expenditures. This overall decrease reflects the higher rate of inflation of the government deflator as compared to the rate of inflation of the GNE deflator. Indeed, the government deflator increased at roughly twice the overall inflation rate between 1955 and 1969 and, since 1970, has continued to outpace significantly the economy-wide rate of inflation. To some extent the higher rate of inflation for the government deflator, and hence the decrease in the share of constant dollar total government expenditure, may be illusory given the national accounts convention of using employment as a measure of output in the government sector. This clearly implies an assumption of zero productivity growth in the government sector which seems unlikely to be true. On the other hand, the relatively faster rate of increase of the government deflator may indeed reflect the desire of government to buy an increasingly expensive bundle of goods. Whatever the reason, it is clear that throughout the postwar period measured price changes have not moved in favour of the government sector.

Total government revenue also showed a marked increase over the period 1955 to 1979 but, at the same time, there was a significant relative increase in non-tax revenue. In part, this reflects the growing importance of royalty revenues. The divergence of federal government revenues from total federal spending is evident in Table A-2; in fact, federal revenue declined as a proportion of GNE during the 1975-79 period while spending increased.

The main component of the increase in government revenue is personal direct taxes. Since the introduction of indexation in 1974, federal personal direct tax revenues have declined slightly as a proportion of GNE, but the provincial counterpart has continued to increase. While federal corporate tax collections as a function of GNE fell from 3.6 per

cent over the 1955-59 period to 2.2 per cent over the 1975-79 period, provincial corporate tax collections moved from 0.5 per cent to 1.1 per cent over this same period. Indirect taxes have demonstrated the same relative pattern as corporate tax revenues.

The overall government deficit as a proportion of GNE on a national accounts basis has varied considerably over the 1955-79 period. The federal deficit moved generally in the range between 0.6 and -0.6 per cent between 1955 and 1975, but more recently has averaged over 3 per cent. Conversely, provincial-municipal governments (including the hospital sector) maintained a relatively constant deficit ratio of 0.7 to 0.9 per cent until 1975-1979 when the deficit ratio fell to 0.25 per cent. On a cash requirements basis, however, the overall deficit has been considerably higher. This measure of the deficit is influenced by a number of other factors such as the cash requirements of Crown corporations.

Table A-1

DATA DEFINITIONS

Variable	Source*
Federal tax revenues from:	
Persons	D40059
Corporate	D40065
Indirect	D40071
Other	D40069+D40075+D40080+D40100
Provincial tax revenues from:	
Persons	D40060
Corporate	D40067
Indirect	D40072
Other	D40076+D40081+D40086+D40101
Municipal tax revenues from:	
Indirect	D40073
Other	D40077+D40082+D40088+D40089+D40101
Hospital revenues	D40078+D40083+D40090+D40091+D40103
Federal expenditures on:	
Goods and services	D40112
Investment	D40157
Provincial expenditures on:	
Goods and services	D40114
Investment	D40158
Municipal expenditures on:	
Goods and services	D40115
Investment	D40159
Expenditures on hospitals	D40116+D40160
Federal transfers to:	
Persons	D40118
Governments	D40136+D40137
Other	D40125+D40128+D41970+D40132
Provincial transfers to:	
Persons	D40119
Governments	D40138+D40139
Other	D40126+D40129+D40133

Table A-1 (cont'd)

DATA DEFINITIONS

Municipal transfers to:		
Persons		D40120
Governments	D40140+D40141	
Other		D40134
Hospital transfers		D40555
Inflation	Yearly per cent change in GNE deflator	
Real potential growth	Yearly per cent change in potential GNE (as measured in RDXF)	
Output gap	Per cent deviation of actual GNE from potential GNE	
Real interest rate	Ten-year provincial bond rate less a two-year moving average of inflation	
Output per capita	Real GNE divided by population aged 15 and over	

* The D-numbers refer to Cansim data bank numbers. Variables without corresponding D-numbers are constructed from the Bank of Canada's RDXF data base.

Table A-2

A COMPARISON OF AGGREGATE GOVERNMENT EXPENDITURES, TRANSFERS AND REVENUES (BY LEVEL OF GOVERNMENT): 1955-1979

Fiscal instrument aggregates	Government expenditures, transfers and revenues as a proportion of GNE (%)				
	1955-59	1960-64	1965-69	1970-74	1975-79
Expenditures on goods and services including investment expenditures and public administration and defense:					
Total (all governments)	17.64	19.19	20.87	22.81	23.56
Federal	8.21	6.64	5.95	5.72	5.65
Provincial-municipal-hospital	9.43	12.55	14.92	17.09	17.91
Transfers:					
Total (all governments)	11.35	13.67	14.39	18.26	21.33
Federal	8.64	10.49	10.35	12.89	15.20
Provincial-municipal-hospital	2.71	3.18	4.04	5.37	6.13
Expenditures on goods and services including investment expenditures and public administration and defense plus transfers:					
Total (all governments)	28.99	32.85	35.25	41.08	44.89
Federal	16.86	17.13	16.30	18.61	20.85
Provincial-municipal-hospital	12.13	15.72	18.95	22.47	24.04
Total revenues:					
Total (all governments)	27.99	31.46	35.15	40.36	41.46
Federal	16.73	16.58	16.87	18.58	17.67
Provincial-municipal-hospital:					
Total	11.26	14.88	18.28	21.78	23.79
Excluding transfers from federal government	9.47	12.26	15.29	17.59	19.17
Tax revenues:					
Total	22.91	24.79	27.49	30.35	30.11
Federal	15.42	15.04	15.16	16.52	15.60
Provincial-municipal-hospital	7.49	9.75	12.33	13.83	14.51
Royalty and miscellaneous revenues including transfers from federal government:					
Provincial-municipal	1.98	2.51	2.96	3.76	4.66

Table A-3

A COMPARISON OF AGGREGATE GOVERNMENT EXPENDITURES, TRANSFERS AND REVENUES (BY LEVEL OF GOVERNMENT): 1955-1979

Fiscal instrument components	Government expenditures, transfers and revenues as a proportion of GNE (%)				
	1955-59	1960-64	1965-69	1970-74	1975-79
Investment expenditures:					
Total	3.83	4.17	4.30	3.72	3.31
Federal	0.74	0.59	0.67	0.59	0.55
Provincial-municipal	3.09	3.58	3.63	3.13	2.76
Expenditures for public administration and defense employment:					
Total	3.16	3.48	3.57	4.16	4.72
Federal	1.61	1.72	1.72	1.89	1.99
Provincial-municipal	1.55	1.76	1.85	2.27	2.73
Expenditures on goods and services excluding investment expenditures and public administration and defense employment:					
Total	10.65	11.55	13.01	14.94	15.52
Federal	5.86	4.34	3.57	3.25	3.10
Provincial-municipal	4.79	7.21	9.44	11.69	12.42
Personal direct taxes:					
Total	6.63	7.46	9.39	12.73	13.32
Federal	5.92	6.28	6.72	8.85	8.45
Provincial-municipal	0.71	1.18	2.67	3.88	4.87
Corporate taxes (collections basis):					
Total	4.11	4.07	3.94	3.71	3.88
Federal	3.62	3.21	2.95	2.71	2.76
Provincial-municipal	0.49	0.86	0.99	1.00	1.12
Indirect taxes:					
Total	12.18	13.26	14.16	13.91	12.91
Federal	5.89	5.55	5.49	4.96	4.39
Provincial-municipal	6.29	7.71	8.67	8.95	8.52
Transfers to persons:					
Total	6.49	6.89	6.89	8.73	9.77
Federal	4.55	4.84	4.33	5.43	6.15
Provincial-municipal	1.94	2.05	2.56	3.30	3.62
Transfers to provincial-municipal governments from federal	1.79	2.62	2.99	4.19	4.62

Table A 4

FEDERAL GOVERNMENT (MAJOR) TAX CHANGES: 1955-1979

Date	Personal Taxation Policy Changes	Corporation Taxation Policy Changes	Indirect Taxation Policy Changes
1955	- downward revision of the tax rate schedule	- corporate tax rate reduced from 47% to 45%	- tax on cars reduced from 15% to 10%
1956			
1957	- registered retirement annuity plan - $100 standard deduction for charitable contributions		- tax on cars reduced from 10% to 7.5%
1958	- exemptions increased - tax rate lowered at low end - medical expenses deduction		
1959	- 2% tax surcharge on taxable income over $3000 - 1% rate increase for Old Age Security Fund (OASF)	- corporate tax rate increased from 45% to 47% on income over $25,000 - 1% rate increase for OASF	- 1% rate increase for OASF - excise tax increase on cigarettes, wine, spirits - tax on dividends and interest paid abroad increased to 15%
1960			
1961	- 4% surtax on investment income	- accelerated depreciation allowances - fast write-off for R&D expenditures	- tax on cars reduced from 7.5% to 0%
1962	- increase in exemptions for dependents	- accelerated depreciation allowances extended - 150% fast write-off for R&D expenditures - tax reduction to manufacturing and processing companies on profits from increased sales	- customs duty surcharge, excluding raw materials and foodstuffs - selected reductions in same surcharge

Table A-4 (cont'd)

Date	Personal Taxation Policy Changes	Corporation Taxation Policy Changes	Indirect Taxation Policy Changes
1963		- taxation reductions for manufacturing and processing in selected "slow growth" areas - tax payment period changed to within four months of corporate fiscal year-end from six months	- effective sales tax increase on building materials, production machinery and equipment - selected reductions in this sales tax increase
1964	- 1% rate increase for OASF	- 1% rate increase for OASF	
1965	- income tax payable reduced by 5% or $300 in 1965 and 10% or $600 in 1966	- accelerated depreciation allowances extended	
1966	- reduced $600 maximum substantially, shifted 10% rate to 20%	- reductions in depreciation allowances, coverage shortened - 5% refundable tax on profits over $30,000	
1967	- increase in maximum payable for OASF to $240 from $120		- 11% sales tax on production machinery and equipment
1968	- 3% surtax on amount of basic tax in excess of $200	- 5% refundable tax refunds begin in June, every two months thereafter - final adjustment tax payment due in third month following corporate tax year-end - surtax of 3% on taxable income	
1969	- 3% surtax extended to December 1970 - social development tax of 2% of taxable income, $120 maximum	- 3% surtax extended	- Kennedy round tariff reductions
1970	- 3% surtax extended through 1971	- 3% surtax extended to end of 1971	

Table A-4 (cont'd)

Date	Personal Taxation Policy Changes	Corporation Taxation Policy Changes	Indirect Taxation Policy Changes
1971	- 3% surtax removed on July 1, 1971 - tax rates reduced for taxable income under $3000 - 3% income tax reduction	- 3% surtax removed on July 1, 1971 - reduction by 7% of tax payable until December 1972	- excise tax reductions
1972	- 50% of realized (net) capital gains taxable - dividend income increased by one third for taxation but credit up also - income averaging broadened* - exemptions increased but taxable income defined more broadly as well	- increase in corporate taxes on income less than $25,000	- estates tax established - sales tax replaces 3% OASF tax
1973	- basic federal tax cut of 5% or $500	- corporate tax rate cut to 40% for manufacturing and processing	- sales tax removed on children's clothing and footwear - one-year tariff reductions on selected goods - export tax on crude
1974	- RHOSP introduced - family allowances taxed as income - $1000 interest income tax exempt - basic federal tax cut extended - indexation of tax sector introduced	- final tax payment advanced to second rather than third month after corporate tax year - one-year surtax of 10% on profits of selected sectors - reductions in accelerated depreciation allowances and other tax treatments of resource industries	- sales tax removed on clothing and footwear - sales tax on building materials reduced from 11% to 5%

* Personal Tax Reform Act

Table A-4 (cont'd)

Date	Personal Taxation Policy Changes	Corporation Taxation Policy Changes	Indirect Taxation Policy Changes
1975	- basic federal tax cut increased to 8% or $750 - $1000 deduction for pension income	- 5% investment tax credit	- 10 cent per gallon surtax on gasoline for personal use - 5% sales tax on insulation materials removed
1976	- 10% surtax on incomes over $30,000 - certain deductions increased		
1977	- exemptions and deductions increased	- 3% of opening value of inventories allowed for deduction - 5% investment tax credit extended	
1978	- tax credit of $200 per child - temporary transfer of personal income tax points to provinces to offset sales tax cuts	- income debentures reclassified for tax purposes - increased deductions for R&D expenditures	- sales tax reduction - special tax on gasoline reduced
1979	- elimination of $50 credit per child		

Table A-5

FEDERAL-PROVINCIAL (MAJOR) REVENUE ARRANGEMENTS: 1955-1979*

Period	Types of Revenue Arrangements	Characteristics of Revenue Arrangements
1952-1957	Personal and corporate tax rentals	- all provinces except Quebec participating. Two options: per capita grants or portions of federal personal income tax revenues and corporate profits (set at 5% and 8.5% of 1948 levels respectively).
	Tax abatements	- Quebec imposed a 7% corporate income tax and received in return a 7% abatement plus, in 1954, a 15% personal income tax (of federal tax): a 10% abatement granted.
	Equalization payments	- implicit in the tax rental arrangements of the 1952 Act
	Conditional grants	- explicit in the 1952 Act
1957-1962	Personal and corporate tax rentals	- all provinces except Quebec participating. Option allows for: (i) 10% personal taxes collected excluding OASF; (ii) 9% of corporate profits; and (iii) 50% of federal succession duties.
(1958)	Tax abatements	- personal tax rental revised to 13%
(1960)		- Quebec received tax abatements for personal and corporate taxes
		- corporate tax abatement increased to 10% in lieu of federal conditional grants to universities
	Equalization payments	- unconditional grant designed to increase per capita tax yields (personal, corporate, succession taxes) to the average per capita yields in the two richest provinces
	Conditional grants	- shared-cost programs (Hospital Insurance and Diagnostic Services Act) increased - support for universities increased

* Sources: D.A.L. Auld and F.C. Miller, "Principles of Public Finance: A Canadian Text", Methuen (1975); J.C. Strick, "Canadian Public Finance", 2nd Edition, Holt (1977); and Robin Boadway, "Intergovernmental Transfers in Canada", Tax Foundation, (1980).

Table A-5 (cont'd)

Period	Types of Revenue Arrangements	Characteristics of Revenue Arrangements
1962-1967	Tax abatements	- provinces re-enter the personal and corporate taxation fields, federal government gives abatements to make "room" for provincial taxation
		- initial abatement is 16% of basic personal tax, increasing by 1% per year until 1966.
(1964)		- abatement increased to 21% in 1965 and 22% in 1966; Quebec allowed additional 3 percentage points in lieu of Youth Allowance Program
(1965)		- abatement increased to 24% in 1966
		- corporate tax abatement was 9% of taxable corporate income
		- provinces establish variety of tax rates; only Quebec collects personal taxes, Quebec and Ontario collect corporate taxes separately - hence different tax bases possible.
	Equalization payments	- unconditional grant designed to increase per capita tax yields (personal, corporate, succession taxes plus provincial taxes on natural resources) to the national average per capita yield
(1964)		- unconditional grant reverted to base of average per capita yields in the two richest provinces
(1965)	Conditional grants	- three categories established with varying degrees of "opting-out" available to provinces
(Oct., 1965)	Abatement points for "Opting out"*	- Hospital insurance yielded 14 abatement points for opting out, Canada Assistance Plan yielded 4 points, and other opting-out plans yielded 2 points. Quebec given 23 points in lieu of program grants.
1967-1972	Tax abatements	- abatement for personal tax sector raised to 28% - abatement for corporate tax sector raised to 10%

* Opting out was also extended to other shared programs; in particular, the Canada Pension Plan which came into effect on 1 January, 1966.

Table A-5 (cont'd)

Period	Types of Revenue Arrangements	Characteristics of Revenue Arrangements
	Equalization payments	- unconditional grants designed to increase per capita tax yields (basket of 16 taxes) to the national average per capita yield
	Conditional grants	- 1 additional abatement point for opting out - education abatement granted related to 50% of costs of post-secondary education
1972-1977	Tax abatements	- abolished except for "opting-out" arrangements linked to conditional grants
	Taxation	- federal taxes exclusive of provincial abatements, provinces free to set taxes, federal basic tax rate reduced to rough equivalence of previous general 28% point abatement
	Equalization	- unconditional grants designed to increase per capita tax yields (basket of 19 taxes) to the national average per capita yield
(1973)		- basket extended to 20 taxes
(1975)		- tax revenue redefined to include, in addition to other taxes, one-third of the revenue accruing owing to higher oil/gas prices
1977-(1979)	Taxation	- Established Program Financing Act - tax abatement to provinces of 13.5 points of personal income and 1 point of corporate income tax
		- net gain is 9.143 points of personal tax (4.357 points already transferred for post-secondary education in 1967)
	Conditional grants	- tax abatement in lieu of grants for portions of certain shared-cost programs (hospital insurance, medicare, post-secondary education)
	Equalization payments	- unconditional grants designed to increase per capita tax yields (basket of 29 revenue sources) to the national average per capita yield

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